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0160489en	003
1106	

Roller

RD 27-100
RD 27-120

OPERATOR'S MANUAL

0160489EN

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CALIFORNIA

Proposition 65 Warning:

WARNING

Diesel engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

1. Foreword

This manual provides information and procedures to safely operate and maintain this Wacker model. For your own safety and protection from injury, carefully read, understand and observe the safety instructions described in this manual.

Keep this manual or a copy of it with the machine. If you lose this manual or need an additional copy, please contact Wacker Corporation. This machine is built with user safety in mind; however, it can present hazards if improperly operated and serviced. Follow operating instructions carefully! If you have questions about operating or servicing this equipment, please contact Wacker Corporation.

The information contained in this manual was based on machines in production at the time of publication. Wacker Corporation reserves the right to change any portion of this information without notice.

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Any type of reproduction or distribution not authorized by Wacker Corporation represents an infringement of valid copyrights and will be prosecuted. We expressly reserve the right to make technical modifications, even without due notice, which aim at improving our machines or their safety standards.

2.Safety Information

This manual contains DANGER, WARNING, CAUTION, and NOTE callouts which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

CAUTION: Used without the safety alert symbol, CAUTION indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Note: *Contains additional information important to a procedure*.

2.1 Operating Safety

WARNING

Familiarity and proper training are required for the safe operation of equipment. Equipment operated improperly or by untrained personnel can be dangerous. Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate the machine.

2.1.1 ALWAYS wear protective clothing appropriate to the job site when operating equipment.

2.1.2 ALWAYS remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the equipment.

2.1.3 ALWAYS read, understand, and follow procedures in the Operator's Manual before attempting to operate the equipment.

2.1.4 ALWAYS store the equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.

2.1.5 ALWAYS check that all controls are functioning properly immediately after start-up! DO NOT operate machine unless all controls operate correctly.

2.1.6 ALWAYS operate the machine with all safety devices and guards in place and in working order.

2.1.7 ALWAYS remain aware of changing positions and movement of other equipment and personnel on the job site.

2.1.8 ALWAYS remain aware of changing surface conditions and use extra care when operating over uneven ground, on hills, or over soft or coarse material. The machine could shift or slide unexpectedly.

2.1.9 ALWAYS use caution when operating near the edges of pits, trenches or platforms. Check to be sure ground surface is stable enough to support the weight of the machine and operator and there is no danger of the machine sliding, falling or tipping.

2.1.10 ALWAYS be sure that all other persons are at a safe distance from the machine. Stop the machine if people step into the working area of the machine.

2.1.11 ALWAYS disengage and stow the locking bar for the articulated steering joint before operating the machine. The machine cannot be steered when the locking bar is engaged.

2.1.12 DO NOT attempt to start the machine when standing alongside it. Only start the engine when seated in the driver's seat and with the forward/reverse control in the neutral position.

2.1.13 NEVER allow improperly trained people to operate this equipment. People operating this equipment must be familiar with the potential risks and hazards associated with it.

2.1.14 NEVER carry passengers. Danger of crushing — keep clear of the articulated steering joint between the front and rear frames.

2.1.15 NEVER use or attempt to repair damaged safety belts or ROPS. Replace only with Wacker spare parts.

2.1.16 NEVER touch the engine or muffler while the engine is on or immediately after it has been turned off. These areas get hot and may cause burns.

2.1.17 NEVER use accessories or attachments that are not recommended by Wacker. Damage to equipment and injury to the user may result.

2.1.18 NEVER leave machine running unattended.

2.1.19 NEVER start a defective unit in need of service or repair.

2.2 Operator Safety while using Internal Combustion Engines

DANGER

Internal combustion engines present special hazards during operation and fueling. Read and follow the warning instructions in the engine owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

2.2.1 DO NOT run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.

2.2.2 DO NOT smoke while operating the machine.

2.2.3 DO NOT smoke when refueling the engine.

2.2.4 DO NOT refuel a hot or running engine.

2.2.5 DO NOT refuel the engine near an open flame.

2.2.6 DO NOT spill fuel when refueling the engine.

2.2.7 DO NOT run the engine near open flames.

2.2.8 ALWAYS refill the fuel tank in a well-ventilated area.

2.2.9 ALWAYS replace the fuel tank cap after refueling.

2.2.10 ALWAYS check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the machine if fuel leaks are present or the fuel lines are loose.

2.2.11 ALWAYS keep the area around a hot exhaust pipe free of debris to reduce the chance of an accidental fire.

2.2.12 DO NOT remove radiator cap when the engine is running or hot. The radiator fluid is hot and under pressure and may cause severe burns!

2.3 Service Safety

WARNING

Poorly maintained equipment can become a safety hazard! In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

2.3.1 Some service procedures require that the machine's battery be disconnected. To reduce the risk of personal injury, read and understand the service procedures before performing any service to the machine.

2.3.2 All adjustments and repairs MUST be completed before operation. NEVER operate the machine with a known problem or deficiency! All repairs and adjustments should be completed by a qualified technician.

2.3.3 DO NOT stand under the machine while it is being hoisted or moved.

2.3.4 DO NOT get onto the machine while it is being hoisted or moved.

2.3.5 DO NOT use the machine as a ladder. Use safe ladders and platforms designed for this purpose.

2.3.6 DO NOT modify, weld or drill safety frames (ROPS) fitted as original equipment. DO NOT loosen or remove bolts. DO NOT weld, drill or modify a broken safety frame.

2.3.7 DO NOT attempt to open the radiator cap while the unit is running or before the engine has cooled down. Severe burns may result!

2.3.8 DO NOT modify the equipment without the express written approval of the manufacturer.

2.3.9 DO NOT attempt to clean or service the machine while it is running. Rotating parts can cause severe injury.

2.3.10 DO NOT use gasoline or other types of fuels or flammable solvents to clean parts, especially in enclosed areas. Fumes from fuels and solvents can become explosive.

2.3.11 ALWAYS keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

2.3.12 ALWAYS replace worn or damaged components with spare parts designed and recommended by Wacker Corporation.

2.3.13 ALWAYS keep the machine clean and labels legible. Replace all missing and hard-to-read labels. Labels provide important operating instructions and warn of dangers and hazards.

2.3.14 ALWAYS check all external fasteners at regular intervals.

2.3.15 ALWAYS turn engine off before performing maintenance or making repairs.

2.3.16 ALWAYS secure the articulated steering joint using the locking bar before lifting, jacking, and servicing the machine. Machine halves could swing together unexpectedly and cause a serious injury.

2.3.17 ALWAYS keep hands, feet and loose clothing away from moving parts.

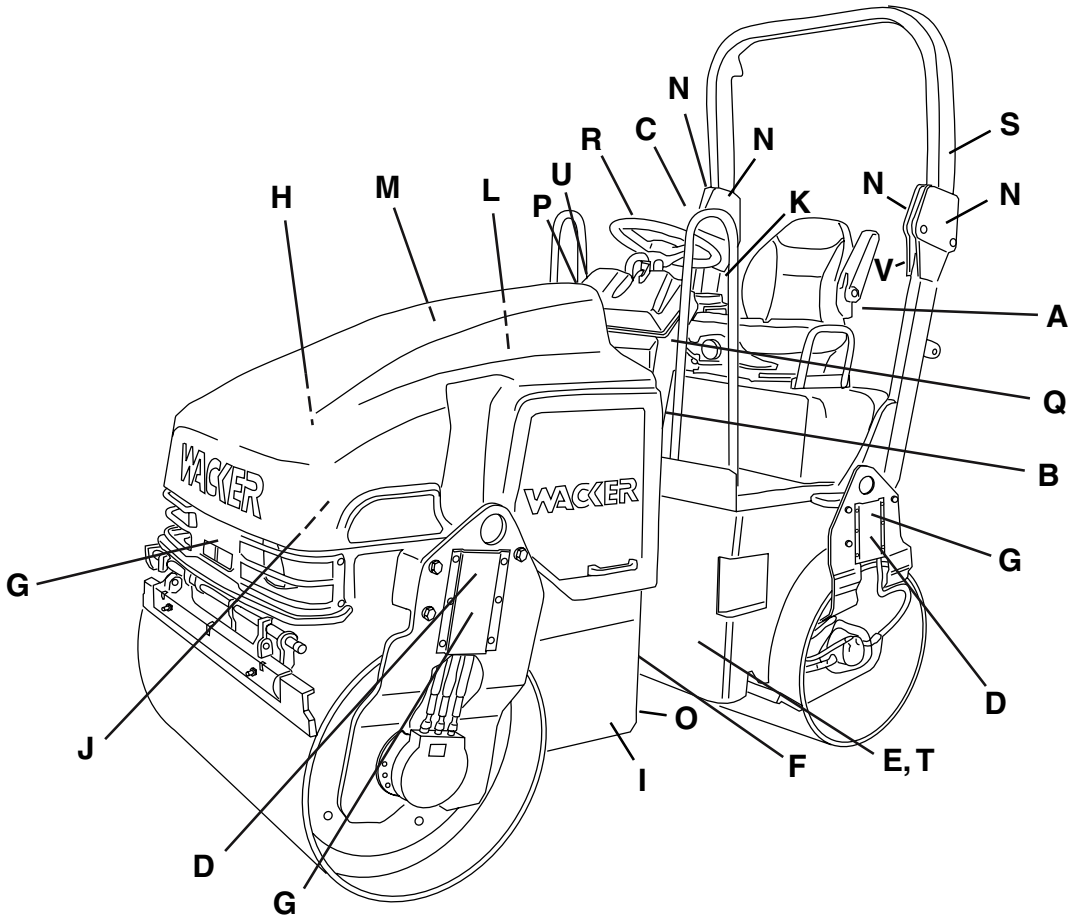
2.3.18 ALWAYS make sure slings, chains, hooks, ramps, jacks and other types of lifting devices are attached securely and have enough weight-bearing capacity to lift or hold the machine safely. Always remain aware of the location of other people around when lifting the machine.

2.3.19 Before you start the machine, ensure that all tools have been removed from the machine and that replacement parts and adjusters are firmly tightened.

2.3.20 DO NOT open hydraulic lines or loosen hydraulic connections while engine is running! Before dismantling hydraulic connectors or hoses, ensure that all pressure has been bled from the circuit. Hydraulic fluid under pressure can penetrate the skin, cause burns, blind, or create other potentially dangerous hazards. Set all controls in neutral, and turn engine off and allow fluids to cool before loosening hydraulic fittings or attaching test gauges.

2.3.21 Fluid leaks from small holes are often practically invisible. DO NOT use your bare hands to check for leaks. Check for leaks using a piece of cardboard or wood.

2.4 Label Locations



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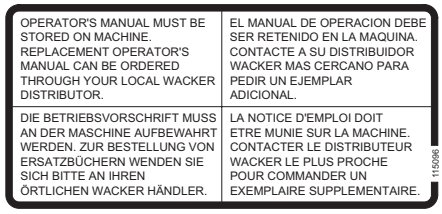
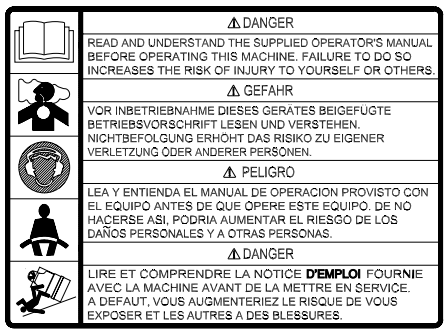
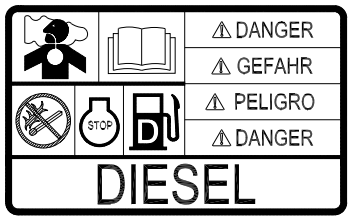
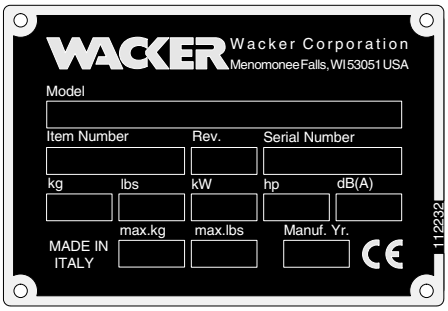
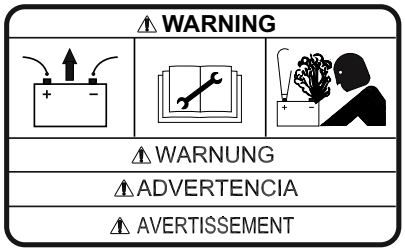
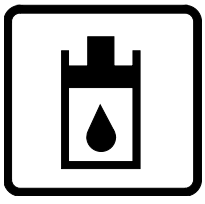
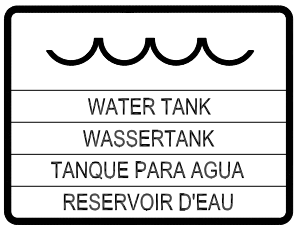
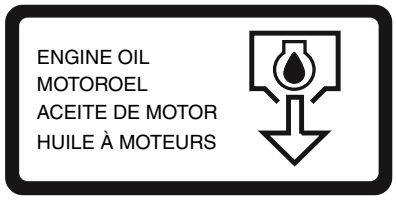
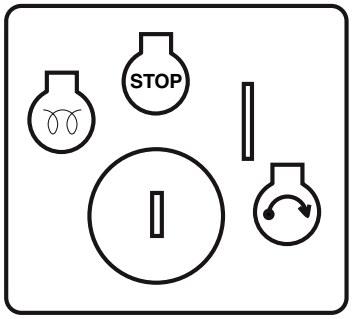
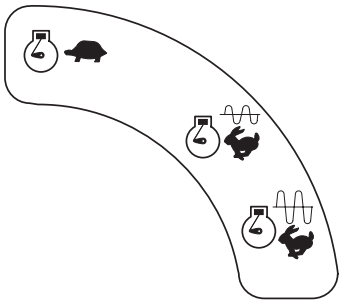
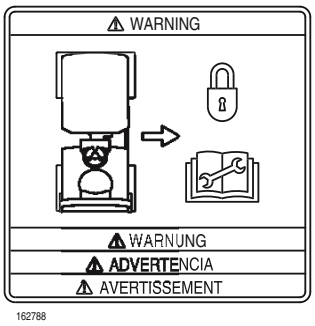
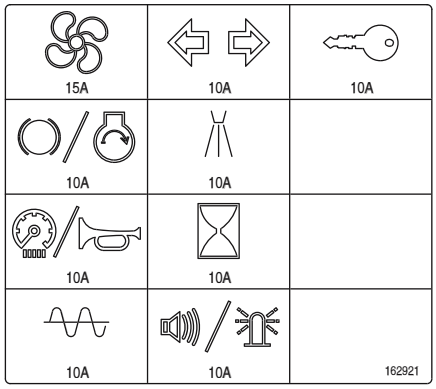
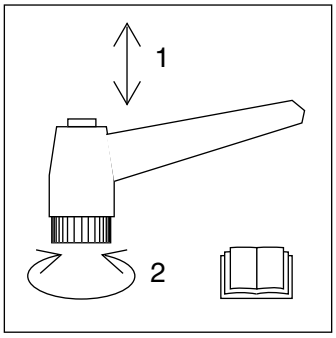
2.5 Warning & Informational Labels

Ref.	Label	Meaning
A		Operator's Manual must be stored on machine. Replacement Operator's Manual can be ordered through your local Wacker distributor.
B		DANGER! Read and understand the supplied Operator's Manuals before operating this machine. Failure to do so increases the risk of injury to yourself and others. Engines emit carbon monoxide; operate machine in well-ventilated area. To reduce the risk of hearing loss, wear hearing protection when operating this machine. Always wear seat belt when operating roller. Never operate the machine sideways on slopes.
C		DANGER! Asphyxiation hazard. Read the Operator's Manual for instructions. No sparks, flames, or burning objects near machine. Stop the engine before adding fuel. Use only diesel fuel.
D		CAUTION! Lifting point

Ref.	Label	Meaning
E		A nameplate listing the model number, item number, revision number, and serial number is attached to each unit. Please record the information found on this plate so it will be available should the nameplate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model number, item number, revision number, and serial number of the unit.
F		WARNING! Avoid crushing area.
G		Tie-down point
H		WARNING! Disconnect battery before servicing. Read Repair Manual. Explosion hazard. Batteries can emit explosive hydrogen gas. Keep all sparks and flames away from the battery.
I		Hydraulic oil drain
J		Hydraulic oil reservoir fill.

Ref.	Label	Meaning
K		Water tank fill.
L		WARNING! Pinching hazard. Rotating machinery.
M		WARNING! Pressurized contents. Do not open when hot!
N		WARNING! Avoid crushing area.
O		Engine oil drain.

Ref.	Label	Meaning
P		Key switch positions. Power to glowplugs. Engine stopped (OFF). Engine ON. Power to starter motor.
Q		Throttle lever positions. Idle. Low speed. High speed.
R		Vibration activation and deactivation switch. Forward/reverse lever positions.
S		WARNING! Do not drill or weld the ROPS. Read the Operator's Manual.

Ref.	Label	Meaning
T		WARNING! Avoid crushing area. Articulated steering joint locking location. Lock the articulated steering joint before servicing the machine. Read Repair Manual.
U	 wc_gr002659	Fuse identifications.
V	 wc_gr002757	Tighten screw to reduce vibration. Read operator's manual.
		Guaranteed sound power level in dB(A)

3. Technical Data

3.1 Engine

Item No.		**RD 27** 0009469, 0620007, 0620037, 0620038
Engine		
Engine Make		Perkins
Engine Model		403C-15
Engine Type		Liquid-cooled diesel
Rated Power @ 2450/3000 rpm	kW (Hp)	23.3 (31.3)/25.1 (33.7)
Displacement	cm^3 (in^3)	1496 (91.3)
Starter	type/V/kW	Electric / 12 / 2.7
Alternator	Volts/Amp	12V / 55A
Operating Speeds	rpm	2450/3000
Valve Clearance (cold) intake / exhaust	mm (in.)	0.2 (0.078)
Air Cleaner	type	Dual element
Battery	V / rating CCA CA	12 / 100 Amp-hour 650 @ -17°C (0°F) 820 @ 0°C (32°F)
Engine Oil Capacity	l (qts.)	5.7 (6)
Fuel	type	Clean, filtered diesel
Fuel Tank Capacity	l (gal.)	46.5 (12.3)
Fuel Consumption @ 2450 rpm /3000 rpm	l (gal.)/hr.	7.1 (1.9)/7.7 (2.0)
Coolant Capacity	l (gal.)	6.7 (1.8)

3.2 Roller

Item No.		RD 27 0009469, 0620038	RD 27 0620007, 0620037
Roller			
Overall Dimensions	mm (in.)	2428 x 1300 x 2775 (95.6 x 51.2 x 109.3)	2428 x 1100 x 2775 (95.6 x 43.3 x 109.3)
Operating Weight	kg (lb.)	2750 (6063)	2550 (5622)
Drum Width	mm (in.)	1200 (47.2)	1000 (39.4)
Drum Diameter	mm (in.)	700 (27.6)	700 (27.6)
Water Tank Capacity	l (gal)	150 (39.6)	150 (39.6)
Outside Turning Radius	m (ft.)	3.6 (11.8)	3.5 (11.5)
Forward/Reverse Speed km/hr (mph)	2450 rpm 3000 rpm	0–8.1 (0–5.0) 0–10.0 (0–6.2)	0–8.1 (0–5.0) 0–10.0 (0–6.2)
Vibration Frequency	Hz (vpm)	55 or 66 (3300 or 3960)	55 or 66 (3300 or 3960)

3.3 Lubrication

Item No.		RD 27 0009469, 0620007, 0620037, 0620038
Lubrication		
Engine Crankcase	type l (qts.)	API CH4 or ACEA E5 5.7 (6.0)
Hydraulic System	type l (gal.)	Oil, Arnica 46 26 (6.9)
Articulated Steering Joint	type quantity	GR MU / EP 2 4–5 shots with a hand-held grease gun

3.4 Sound Measurements

The operating sound level, measured per the requirements of Appendix 1, Paragraph 1.7.4.f of the EC-Machine Regulations, is:

- the guaranteed sound power level (L_{WA}) = 106 dB(A).
- the sound pressure level at operator's location (L_{pA}) = 84 dB(A).

This sound value was determined according to ISO 3744 for the sound power level (L_{WA}).

3.5 Measurements of Operator Exposure to Vibration

The operator of this machine should expect to be exposed to vibration levels listed below when using the machine in performance of its normally intended function:

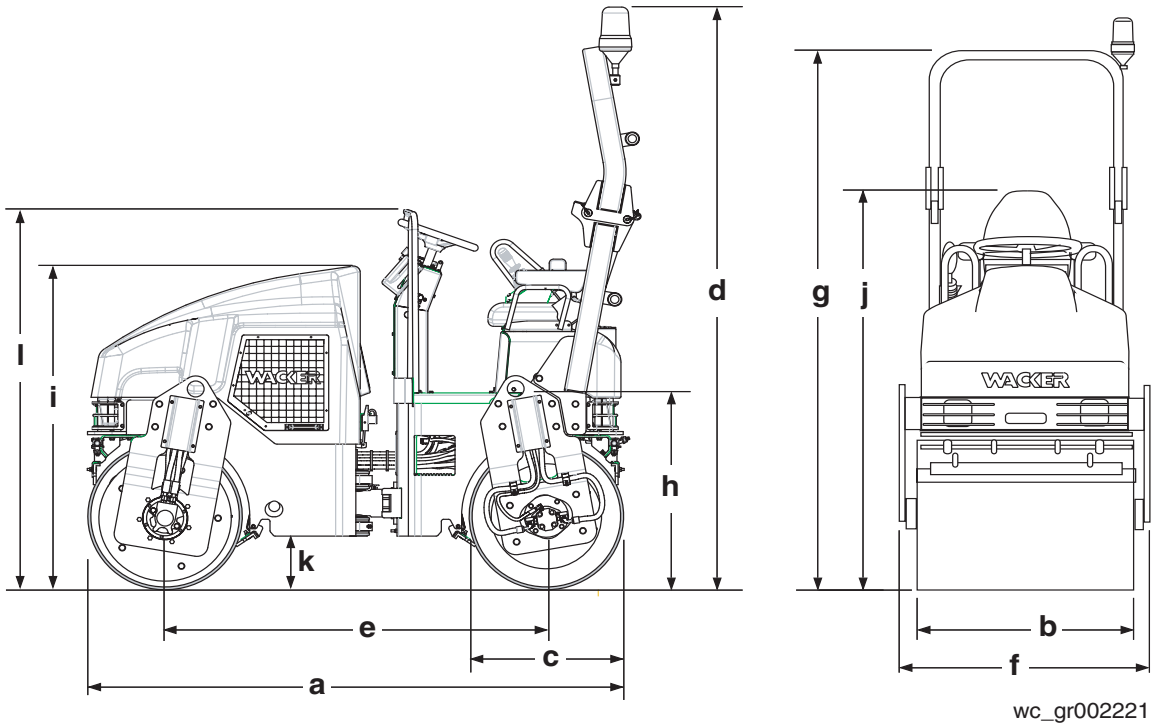
- Hand/arm vibration levels do not exceed 2.5 m/s^2. This is the representative value of the weighted root mean square **(rms)** acceleration to which the hands and arms are subjected. The weighted **rms** value measured according to ISO 5349-1 is 1.89 m/s^2.
- Whole body vibration levels do not exceed 0.5 m/s^2. This is the representative value of the root mean square **(rms)** acceleration to which the whole body is subjected. The weighted **rms** value measured according to ISO 2631-1 is 0.209 m/s^2.

The results are compliant to the limit and action vibration values (hand/arm and whole body) as specified in European directive 2002/44/EC.

3.6 Dimensions

See Graphic: wc_gr002221

Ref.	Dimension mm (inches)	Ref.	Dimension mm (inches)
a	2428 (95.6)	g	2589 (102.0)
b	1000 (39.4)/1200 (47.2)	h	938 (37.0)
c	700 (27.6)	i	1541 (60.7)
d	2775 (109.3)	j	1801 (71.0)
e	1728 (68.0)	k	256 (10.0)
f	1101 (43.3)/1301 (51.2)	l	1801 (70.9)



wc_gr002221

4. Operation

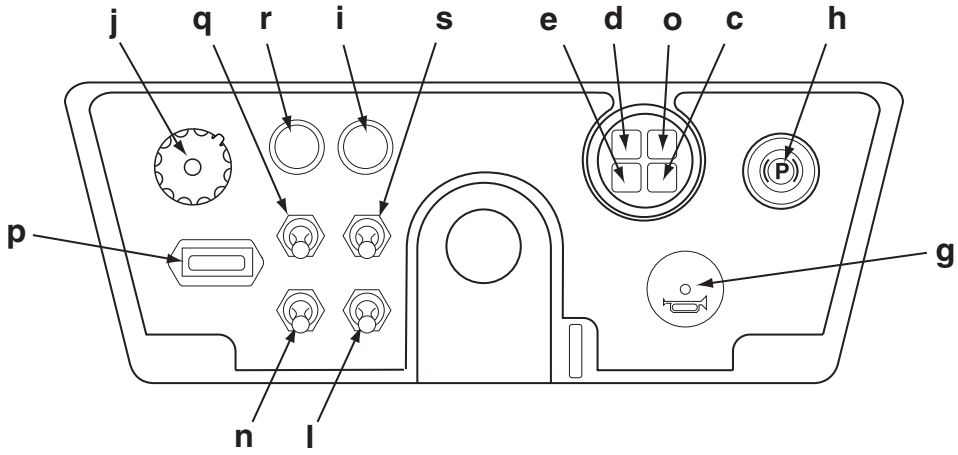
4.1 Application

This machine is designed as a lightweight roller to be used in the compaction of sublayers and finish layers of asphalt on roads, driveways, parking lots, and other types of asphalt-covered surfaces. Do not use this machine for any other purpose.

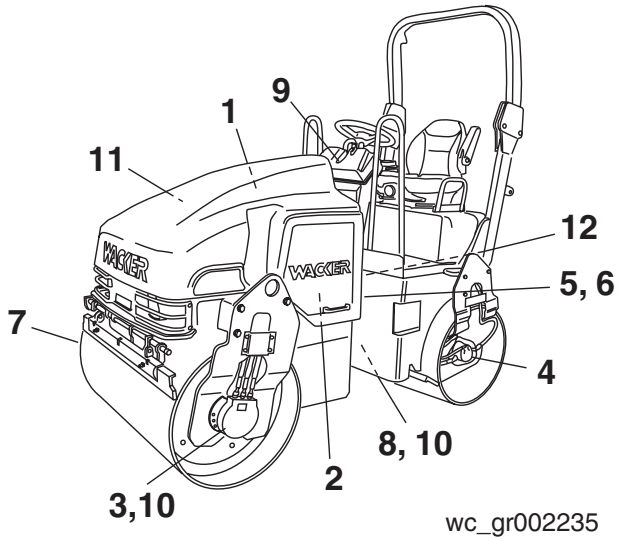
4.2 Operation and Service Locations

See Graphic: wc_gr002228, wc_gr002229, wc_gr002235

Ref.	Description	Ref.	Description
1	Diesel engine	7	Front exciter hydraulic motor
2	Hydraulic transmission pump	8	Rear hydraulic transmission motor
3	Front hydraulic transmission motor	9	Servo steering
4	Rear exciter hydraulic motor	10	Brake
5	Exciter hydraulic pump	11	Oil Cooler
6	Steering hydraulic pump	12	Electric water pump
a	Throttle lever	k	Fuse box
b	Ignition key block	l	Exciter selector switch
c	Alternator warning light	m	Exciter ON/OFF switch
d	Engine oil pressure warning light	n	Water pump switch
e	Hydraulic oil temperature warning light	o	Engine temperature warning light
f	Forward-reverse lever	p	Hour meter
g	Horn	q	Turn signal switch
h	Parking brake warning light and control	r	Flashers-on warning light
i	Vibrator-on warning light	s	Flasher activation switch
j	Light switch	--	---



wc_gr002228



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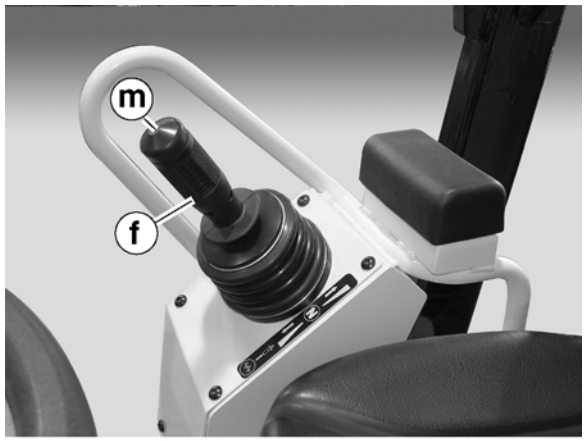


wc_gr002229

4.3 Roll Over Protection Structure (ROPS)

See Graphic: wc_gr002233

The machine is equipped with a Roll Over Protection Structure (ROPS).

WARNING

Do not use the machine without the ROPS in place. The ROPS is designed to protect the operator in a rollover accident.

The machine is normally delivered to the customer with the ROPS folded forward to facilitate transport.

Before using the machine, position the ROPS in the fully upright position as follows:

4.3.1 Support the ROPS **(a)** using a crane and suitable rigging capable of supporting 70 kg (155 lbs.).

CAUTION: Do not use the ROPS to lift the machine.

4.3.2 Remove the safety pin **(b)** and pull out the locking pin **(c)**. Do so on both sides.

4.3.3 Lift the ROPS into the upright position.

4.3.4 Insert the locking pins and secure them with the safety pins.

4.3.5 Tighten the adjusting screw **(d)** as needed to reduce vibration.

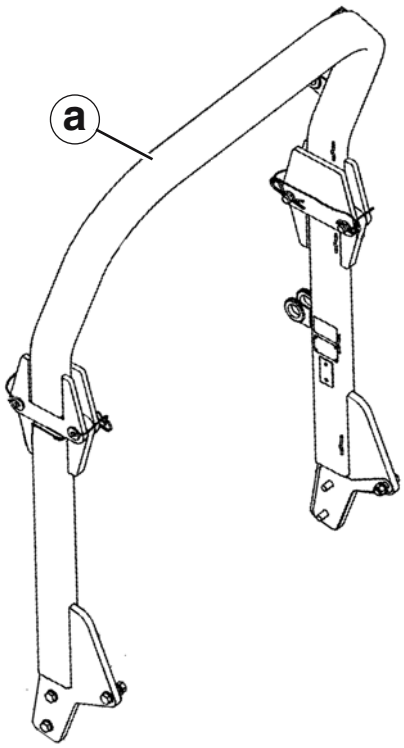
Each month, check the torque on all of the screws holding the ROPS in place. Check that the ROPS frame is not rusty, cracked, broken, or damaged in any way.

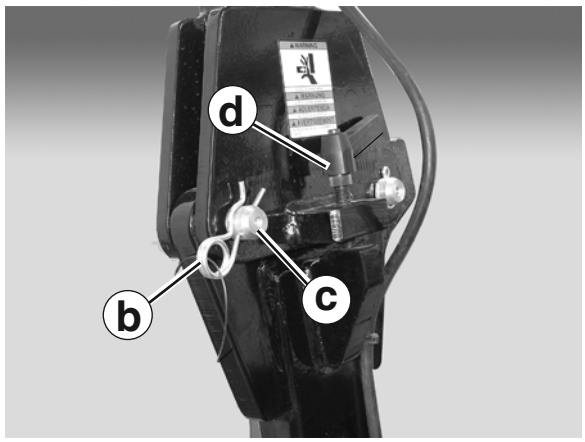
Keep the ROPS in the extended (upright) position when using the roller, and always use the seat belts provided.

Change the seat belts every 3 years, or any time they have been subjected to accident-level loads.

If the ROPS has been removed from the machine, it must be reinstalled before the machine is used. When reinstalling the ROPS, use the original nuts and bolts and tighten the bolts to the specified torques.

Do not weld or drill into the ROPS. Drilling or welding on the ROPS will nullify the ROPS certification.





wc_gr002233

4.4 Rotating Beacon (if equipped)

See Graphic: wc_gr002304

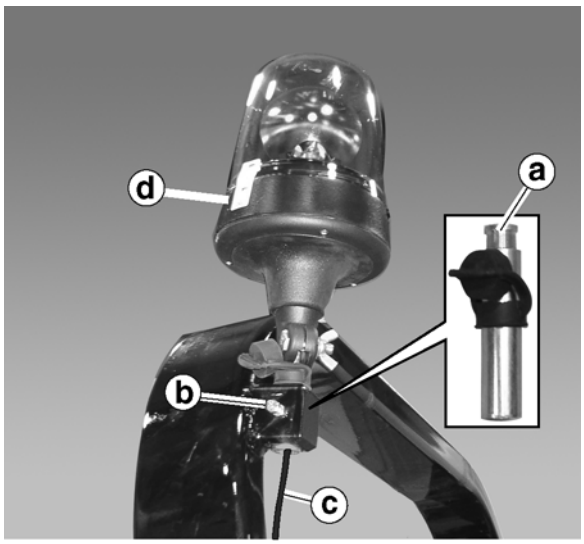
The rotating beacon illuminates and rotates when the key switch is in the ON position.

To install the beacon:

4.4.1 Thread the power wire **(c)** through the light staff and fix it to the upper connector. Insert the connector into the light staff.

4.4.2 Insert the light staff assembly **(a)** into the left side of the machine ROPS and tighten the set screw **(b)**.

4.4.3 Slide the rotating beacon **(d)** onto the light staff.



wc_gr002304

4.5 Backup Alarm

See Graphic: wc_gr002237

The backup alarm **(e)** is located on the rear of the machine.

Start the engine and move the forward-reverse lever to the reverse position. The backup alarm should sound immediately. The backup alarm will continue to sound until the forward-reverse lever is moved to the neutral position or to the forward position.

If the backup alarm does not sound, make the necessary repairs before using the roller.

4.6 Lighting Equipment (if equipped)

See Graphic: wc_gr002237 and wc_gr002313

- Headlights **(a)**.
- Working light **(b)**.
- Front turn signal lights/roading lights **(c)**.
- Rear turn signal lights/roading lights **(d)**.

WARNING When working in the dark or in bad visibility, use all the lights available. Replace broken bulbs immediately. Only replace bulbs when machined is turned off. Remember that your own safety and that of others depends on your care and attention when operating this machine.

-

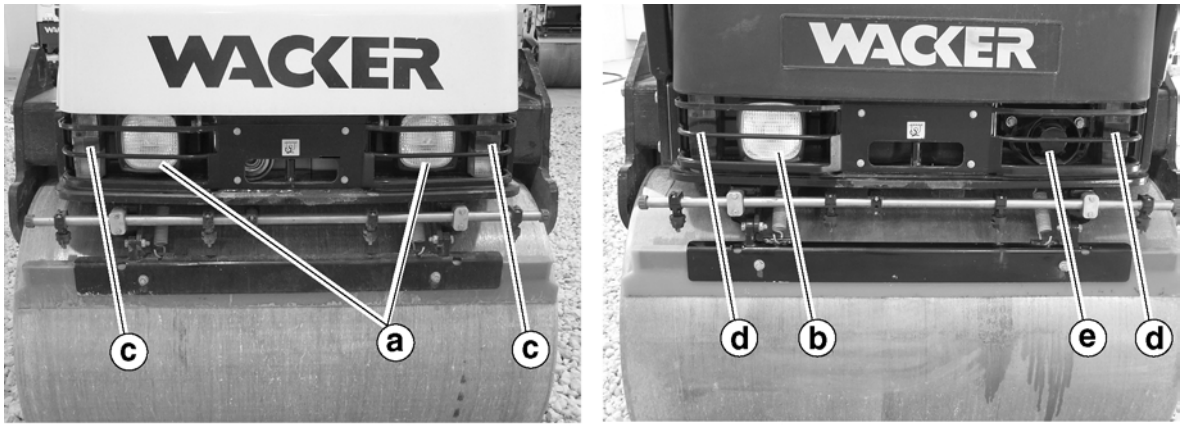
The light switch controls power to the machine's lights as follows:

Position **O** - all lights off

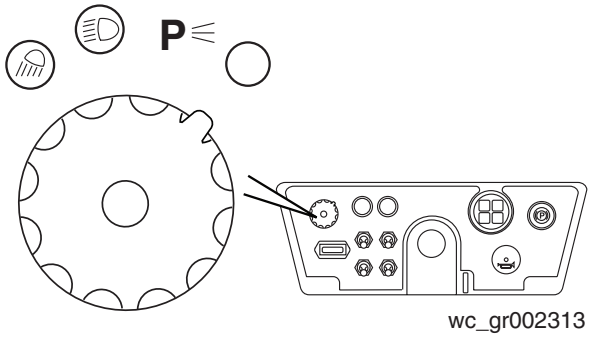
Position **1** - P parking lights (roading lights) on

Position **2** - headlights and roading lights on

Position **3** - headlights, roading lights, and work light on



wc_gr002237



wc_gr002313

4.7 Seat Belt

See Graphic: wc_gr002238

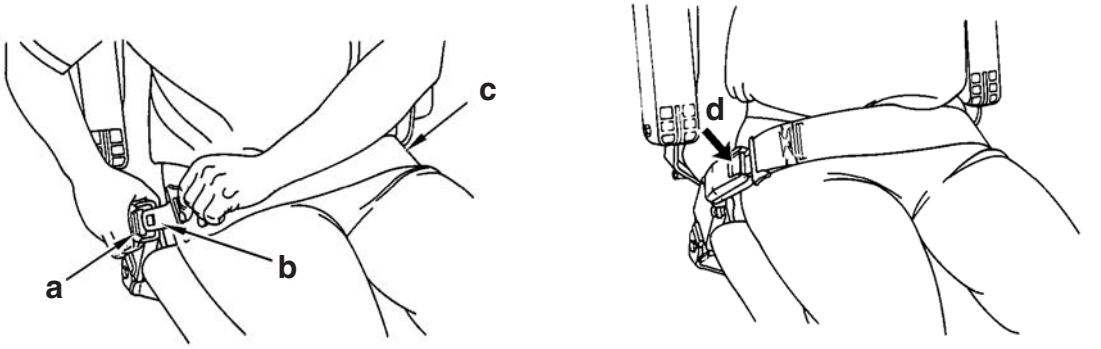
Pull seat belt **(c)** out of the retractor in a continuous motion.

Fasten seat belt catch **(b)** into buckle **(a)**. Make sure that the seat belt is placed low across the lap of the operator.

The retractor will adjust the belt length and the retractor will lock in place.

Push the release button **(d)** on the buckle in order to release the seat belt. The seat belt will automatically retract into the retractor.

Replace the seat belt every three years.



wc_gr002238

4.8 Seat Adjustment

See graphic: wc_gr002234

The machine is equipped with an operator present system. This system is part of the driver's seat and senses the weight of an operator in the seat. If the operator is not sitting in the driver's seat, movement of the roller stops. Machine movement cannot be restored until the Forward/Reverse lever is returned to the neutral position.

The seat can be adjusted in three ways: tension, front to back, and side to side (optional). Adjust the seat position and tension according to working conditions and operator's weight.

- Use knob **(a)** for adjusting seat tension (turn from a minimum of 60 kg to a maximum of 120 kg).
- Use lever **(b)** to adjust the front-to-back distance from the driving controls.
- Use pin **(c)** to set one of the three side-to-side position placement holes (if so equipped).

wc_gr002234

4.9 Scraper Adjustment

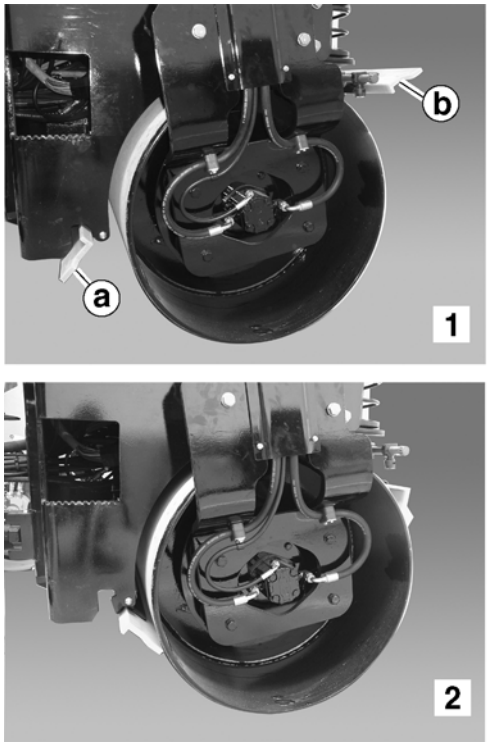
See Graphic: wc_gr002305

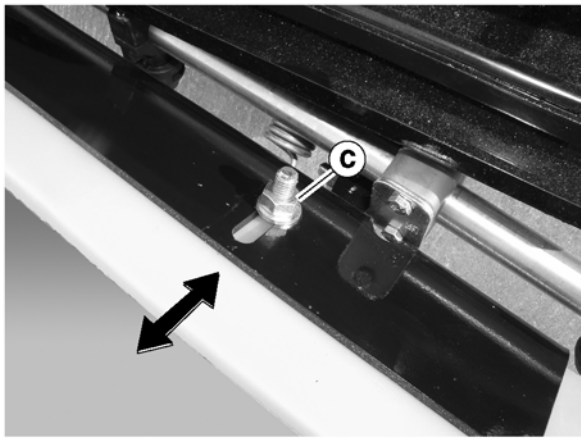
Each drum has two scrapers **(a, b)**. The scrapers are spring-loaded. They may be set in the travel position **(1)** or the scraping position **(2)**.

The scraper distance from the drum may also be adjusted. To adjust the distance:

4.9.1 Loosen the retaining nuts **(c)**.

4.9.2 Adjust the scraper to the desired distance from the drum and retighten the retaining nuts.





wc_gr002305

4.10 Anti-Vandalism Protection and Machine Access

See Graphic: wc_gr002230

Parts of the machine which may be subject to theft or vandalism when the vehicle is parked unattended can be padlocked to prevent unauthorized access or use.

Lockable parts are:

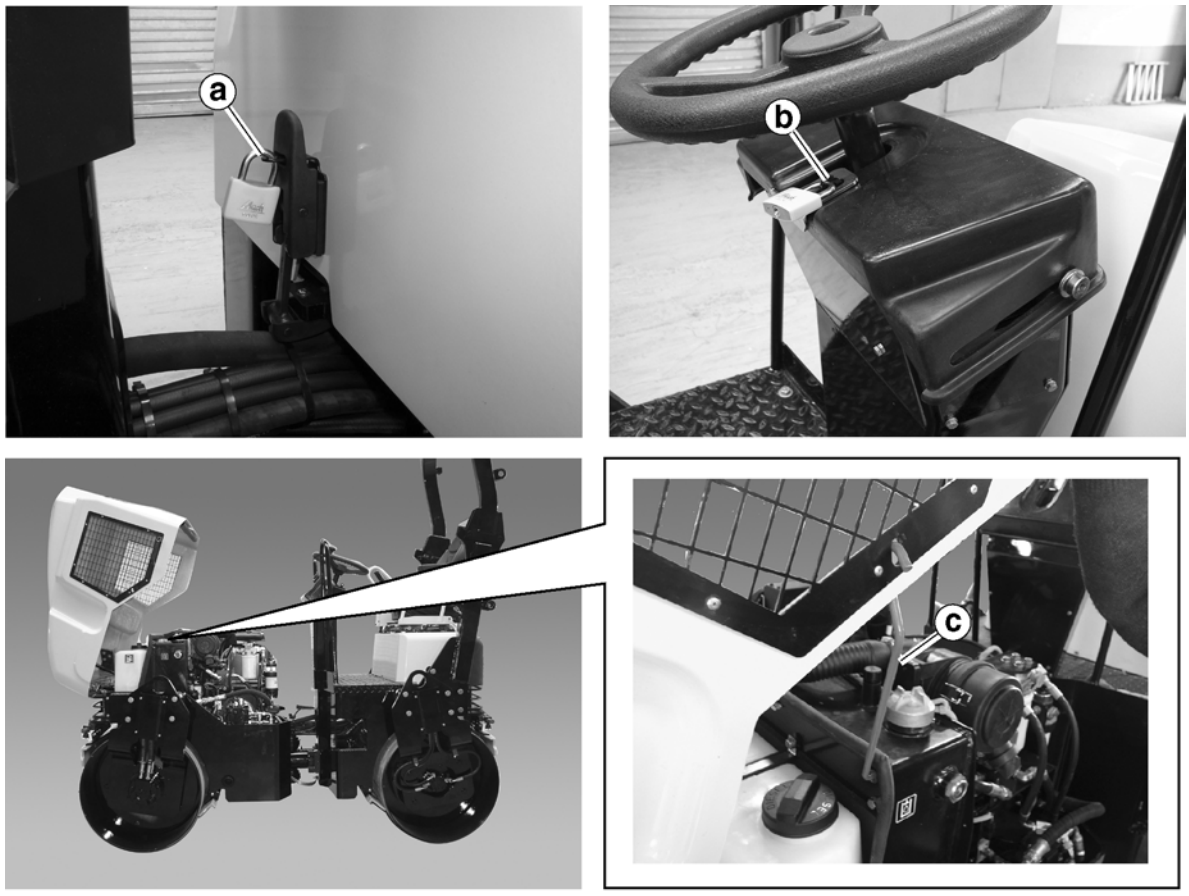
- Engine cover.
- Control console cover.
- Operator's manual holder.

To lock the engine cover, close the cover and attach a padlock to the fastener **(a)**.

The control console cover is usually open during operation and service. To lock the control console cover, slide the cover over the console and attach a padlock to the fastener **(b)**.

Note: *Padlocks are supplied with the machine as standard.*

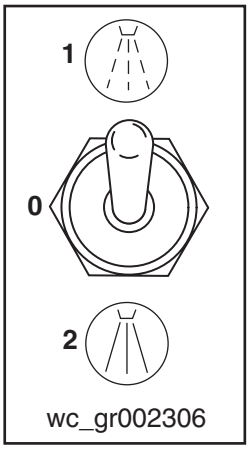
When working on components within the engine compartment, secure the hood in the open position using the safety bar **(c)**.



wc_gr002230

4.11 Water Spray System

See Graphic: wc_gr002306 and wc_gr002307



wc_gr002306

Water from the tank is fed to the spray nozzles by an electric pump. The switch controls the water pump motor. The switch has three positions:

Position **0** - water spray system OFF

Position **1** - activates intermittent water spray system

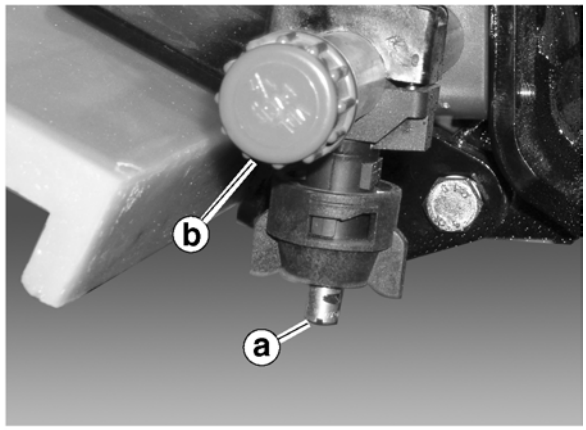
Position **2** - activates continuous water spray system

When using the water spray system:

- Check that the tank is full of water.
- Regularly clean the suction filter in the rear half frame.
- Replace damaged filters.
- Only use clean water. Dirty water, even when filtered, will rapidly clog the tubes of the spraying equipment.

During winter, or when temperatures drop to below 0°C (32°F), drain off the water tank and spraying equipment. Freezing water may cause broken hoses, filters and water pumps and may deform the water tank. Drain the system through the spray bar end plugs **(b)**, the tank drain plug, the water pump filter bowl, and at the manifold drain **(c)**.

The angle of spray may be adjusted. Insert a screwdriver into the nozzle **(a)** and adjust the angle as desired. Ensure water spray covers entire length of drum.



wc_gr002307

4.12 Transmission

See Graphic: wc_gr002308

Both roller drums are driven. An infinitely variable displacement pump and hydrostatic transmission drive the hydraulic motors fitted to each drum. Forward and reverse travel are selected using a forward-reverse lever located to the side of the driver's seat. In order to comply with safety standards, the machine has a device which only enables starting of the diesel engine when the forward-reverse lever is in the neutral position.

Forward-reverse lever

Shift the lever into "Forward" **(f)** or "Reverse" **(r)** according to the direction of travel desired. The further forward or reverse the lever is positioned, the faster the roller will travel.

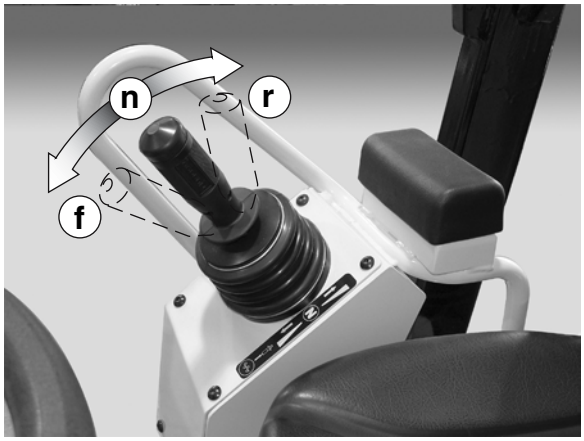
Road speed varies from "ZERO" to a permitted maximum of 10 kph (6.2 mph). Road speed is the same in both "Forward" and "Reverse". If you wish to change direction of travel from FORWARD to REVERSE or vice versa, move the lever to the "N neutral" position **(n)**, allow the vehicle to come to a complete stop, then move the lever in the direction desired. The end of this lever is also fitted with a button for activating the exciter.

Note: *The machine is equipped with an operator present system. The system prevents the machine from moving forward or reverse unless the operator is seated. The operator should remain seated at all times.*

When negotiating gentle slopes, keep the engine at high rpm's and the forward-reverse lever at the minimum position.

CAUTION: This vehicle has a hydrostatic transmission which means that the forward-reverse lever can also be used as an engine brake. Shifting the lever to the neutral position stops the vehicle.

CAUTION: Never drive the machine at low idle speed. Driving the machine at low idle speed can damage the drive pump.



wc_gr002308

4.13 Exciter System

See Graphic: wc_gr002309

The machine has exciters on each drum. The exciters are driven by gear-type hydraulic motors. The exciter motors are fed by a fixed-displacement, gear-type hydraulic pump. The exciters are electrically controlled. A switch **(l)** on the control console is used to select between no vibration, front drum only vibration, or both drum vibration. When activated, a light **(i)** on the control panel illuminates. A separate switch **(m)** on the forward-reverse lever activates the electrical circuit that controls exciter operation. The vehicle chassis is isolated from vibrations by a series of shockmounts.

Exciter selector switch

Use the selector switch **(l)** to select the desired vibration mode:

Position 1 - vibration on front drum only.

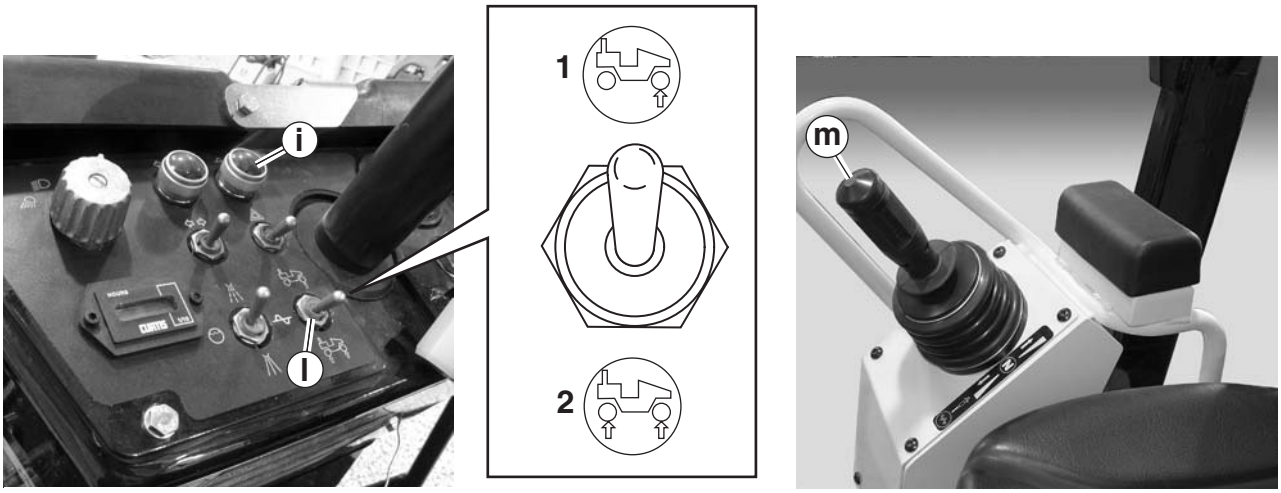
Position 2 - vibration on both drums.

Exciter ON/OFF **switch**

To start vibration, press button **(m)**.

To stop vibration, press button **(m)** again.

CAUTION: Do not leave the vibration running when the vehicle is to remain stationary for some time. Leaving the exciter on for a prolonged period when the machine is stationary may damage the exciter.



wc_gr002309

4.14 Braking System

See Graphic: wc_gr002310

The machine's hydraulic system is the main source of movement and braking. Moving the forward-reverse lever to either the forward or reverse position causes hydraulic oil to flow through the drive motors. Hydraulic oil flow causes the motors to turn and thus the machine to move. When no hydraulic oil flow is delivered to the drive motors, the machine does not move.

To aid in holding the machine in a stopped position (parked), there is a mechanical parking brake on each drum drive motor. The mechanical parking brakes are spring-activated and hydraulically released (SAHR) type brakes. The brakes are applied when: the diesel engine is switched off, the operator leaves the seat, or there is a fault in the hydraulic system.

The mechanical parking brakes may also be activated by a push button **(h)** on the control console.

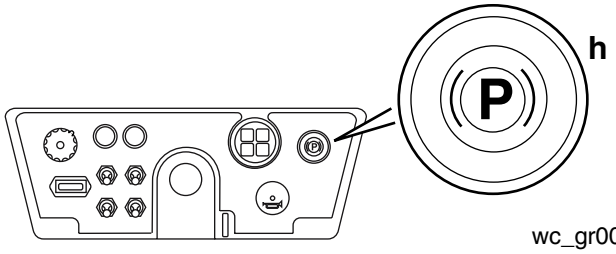
Pushing the button downward sets the brakes.

The "Brakes On" warning light (Ⓟ) illuminates when the button is pressed.

Pulling the button upward re-enables the brake release function.

Note: *The forward-reverse lever must be in the neutral position in order for the push button to allow the release of the brakes. If the forward-reverse lever is not in the neutral position when the parking brake push button is pulled out, the brakes will not be released.*

CAUTION: Under normal operating conditions, do not use the parking brakes when the machine is moving. The parking brakes should only be used when the machine is moving in cases of ***emergency***, e.g., following failure of the main hydraulic braking system (moving the forward-reverse lever to the neutral position) or in a runaway condition traveling down a slope. Using the parking brake while the machine is moving may cause damage to the drive motors.



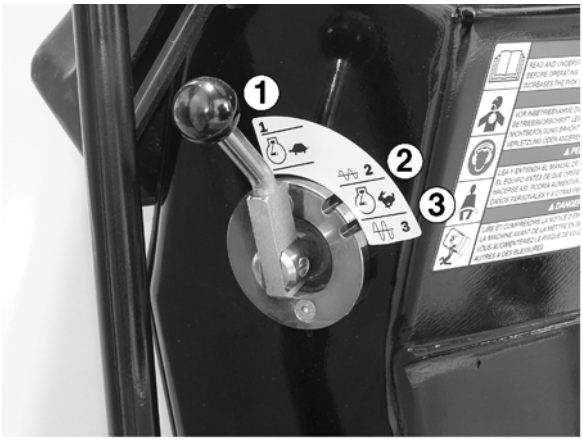
wc_gr002310

4.15 Throttle Lever

See Graphic: wc_gr002311

The throttle lever has three positions which allow the operator to adjust the speed of the engine and thus the frequency of vibration in the drums. Use the idle position **(1)**, when starting or shutting down the engine. Use the medium position **(2),** for approximately 55 Hz of vibration. Use the high position **(3)**, for approximately 66 Hz of vibration.

Note: *Always use the medium or high position when operating the machine.*



wc_gr002311

wc_gr002312

4.16 Ignition Key Switch

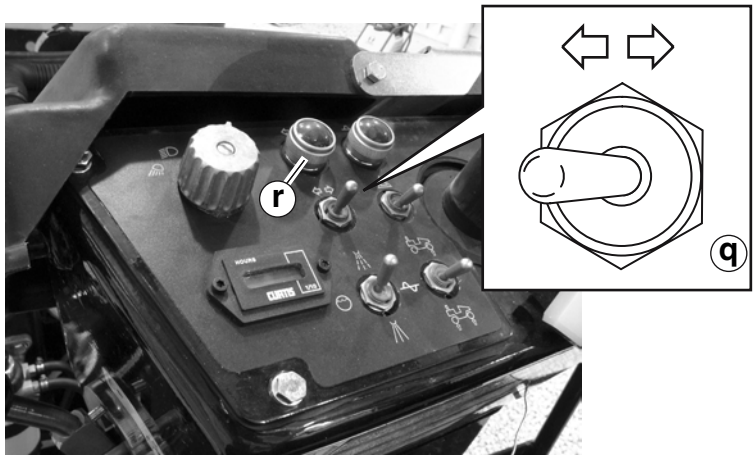
See Graphic: wc_gr002312

The ignition key switch turns on power to the electrical equipment, the engine glow plugs, and the starter motor. The ignition key switch has four positions: In the OFF **(O)** position no power is distributed by the keyswitch; the ON position **(1)** allows power to the control panel instruments; position **(2)** allows power to the glow plugs; and position **(3)** allows power to the starter motor which cranks the engine.

4.17 Turn Signal Indicator (if equipped)

See Graphic: wc_gr0002314

Use the turn signal switch **(q)** to activate the desired turn signal. The flasher light **(r)** will illuminate when the turn signal switch is used.



wc_gr002314

4.18 Panel Indicator Lights

See Graphic: wc_gr002315

Engine oil pressure warning light

This warning light **(d)** illuminates when the key switch is in the ON position; it goes out once the engine has started.

CAUTION: If the light remains off with the key switch in the ON position, check the bulb. Replace the bulb before using the machine.

If the light illuminates when the engine is running, it indicates that the oil pressure is too low. Possible causes for the light to illuminate:

- Oil level is too low.
- Incorrect oil viscosity for the time of year.
- Fault in the oil circuit.

Top up oil level if necessary. Do not operate the machine if the light is illuminated.

Engine high temperature warning light

This warning light **(o)** illuminates to indicate that the engine is overheating.

CAUTION: If the light should illuminate, turn off the engine immediately. Trace the cause of overheating and rectify the situation before operating the machine.

Alternator warning light

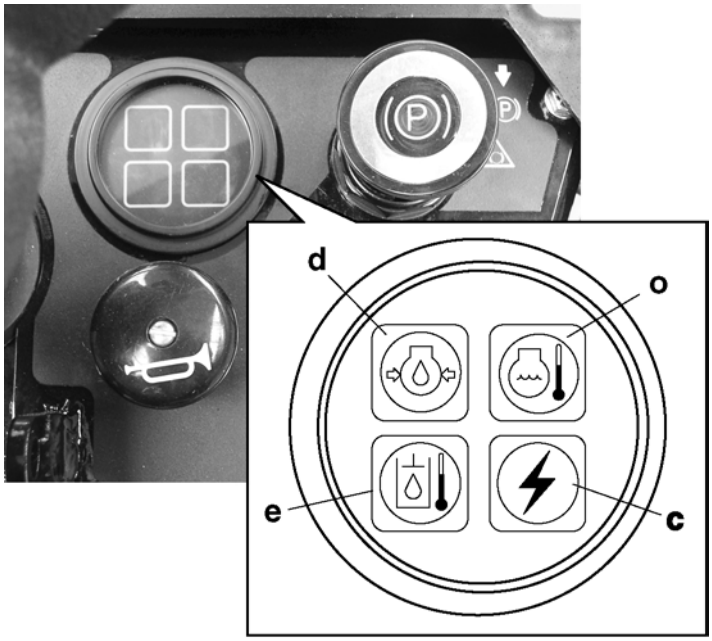
This warning light **(c)** illuminates when the key switch is in the ON position; it goes out once the engine has started.

CAUTION: If the light remains off with the ignition in the ON position, check the bulb. If the light illuminates when the engine is running, stop machine and check for a loose or broken belt, or an electrical problem.

Hydraulic oil temperature warning light

This warning light **(e)** illuminates to indicate that the hydraulic oil is too hot.

CAUTION: If the hydraulic temperature warning light should illuminate, turn off the engine immediately. Trace the cause of overheating and rectify the situation before operating the machine.



wc_gr002315

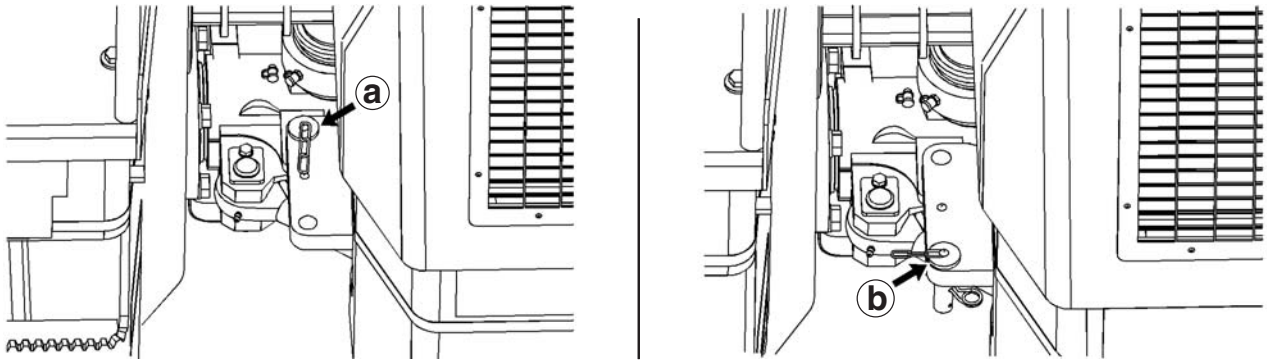
4.19 Locking/Unlocking Articulated Steering Joint

See Graphic: wc_gr002232

Install the articulated steering joint pin in the LOCKED position **(a)** before you lift, transport, or perform maintenance near the center of the machine.

Install the articulated steering joint pin in the UNLOCKED position **(b)** before you operate the machine.

CAUTION: Attempting to steer the machine with the articulated steering joint pin in the locked position may destroy the steering cylinder and locking mechanism.



wc_gr002232

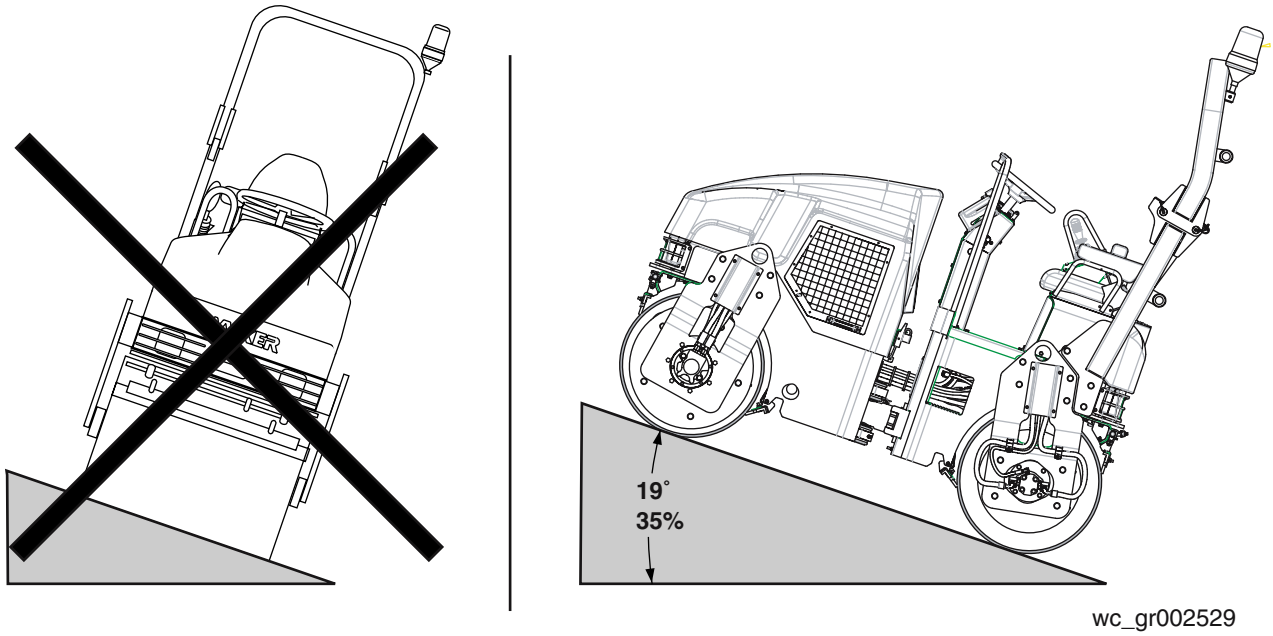
4.20 Operating on Slopes

See Graphic: wc_gr002529

When operating on slopes or hills, special care must be taken to reduce the risk of personal injury or damage to the equipment. Always operate the machine up and down hills rather than from side to side. For safe operation and for protection of the engine, continuous duty use should be restricted to front/rear slopes of 19° (35% grade) or less.

WARNING

NEVER operate machine sideways on slopes. The machine may roll over, even on stable ground.



wc_gr002529

4.21 Preliminary Checks

Before starting the machine, check the following items:

- Check the machine for obstructions and remove all obstructions before operating.
- Place the articulated steering joint locking pin in the unlocked position.
- Remove locks fom vandalism guard and hood.
- With the machine on a flat surface, open the hood, place retaining bar in place to hold hood, and check the following items:
  - Engine coolant level.
  - Engine oil level.
  - Hydraulic oil level.
  - Diesel fuel level.
  - Engine air filter indicator.
  - Condition of oil cooler and radiator cooling fins.
  - Check that there are no fluid leaks.
- Water level in tank.
- Ensure that the drum scrapers are clean.
- Ensure that regular maintenance operations have been carried out.
- Before climbing onto the roller, walk round the machine and check that everything is in order.
- Check that all handles, steps, and platforms are free of dirt, snow, grease, fuel or anything else which might endanger operator safety. Always keep the driver's platform clean.

CAUTION: Top up lubricating and hydraulic oil levels using products with the grades and specifications shown in the table of recommended lubricants and oils in this manual. When doing so, use clean containers, funnels, etc. to avoid contamination.

When climbing on and off the machine, maintain a three-point contact with the steps and the handholds. Three-point contact can be two feet and one hand. Three-point contact can also be one foot and two hands.

4.22 Starting the Engine

See graphic: wc_gr002312, wc_gr002311, wc_gr002229, and wc_gr002582

WARNING

Exhaust gases are toxic. Do not start the engine in enclosed spaces.

4.22.1 Sit down in the operator's seat and fasten seat belt.

4.22.2 Move forward-reverse **(f)** lever to neutral position.

4.22.3 Push parking brake knob **(h)** downward to engage parking brake.

4.22.4 Move throttle to the LOW position **(1)**.

4.22.5 Insert the ignition key into the ignition switch in "Position 0".

4.22.6 Turn the ignition key to "Position 1". Check for power to the control panel. The oil pressure and alternator lights should illuminate.

4.22.7 Turn the ignition key to "Position 2" and hold it there for approximately 15 seconds to supply power to the glow plugs. In warmer weather the time period may be reduced.

4.22.8 Immediately after powering the glow plugs, turn the key to 'Position 3" to crank the engine. When the engine fires, immediately release the ignition key to avoid straining the starter motor. When you release the ignition key, it will return automatically to "Position 1".

4.22.9 The hour meter will begin to function when the engine fires and starts running.

WARNING

Prolonged exposure to high noise levels can damage your hearing. Wear appropriate hearing protection while operating the roller.

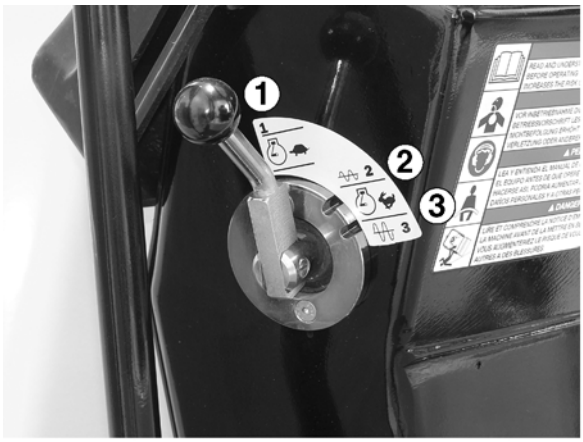
Observe the following recommendations for engine warm-up when operating at the listed temperatures:

- Above 0°C (32°F), the warm-up period is 15 minutes.
- Below 0°C (32°F), the warm-up period is 30 minutes or longer.
- Below -18°C (0°F), more time is required if the hydraulic controls are sluggish.

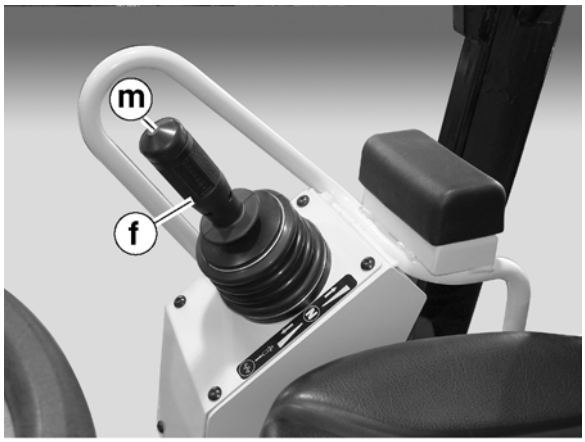
Before moving the machine:

- Check the operation of the parking brake with the engine running.
- Check the operation of the steering system with the engine running.
- Check that the vehicle's exhaust system is in good working order and that there are no leaks.
- Make sure that no one is in the vehicle's path.

wc_gr002312



wc_gr002311



wc_gr002229

wc_gr002582

4.23 Stopping the Engine

See graphic: wc_gr002312, wc_gr002311, wc_gr002229, and wc_gr002582

When you finish using the machine:

4.23.1 Stop the machine on a flat surface with a suitable load bearing capacity.

4.23.2 Move the forward-reverse **(f)** lever to the neutral position.

4.23.3 Move the throttle lever to the low position **(1)**.

CAUTION: Never stop the engine suddenly after a lengthy period of running under heavy loading. Allow the engine to run at idling speed for a few minutes before switching off. This avoids a sudden drop in engine temperature when the engine is switched off.

4.23.4 Apply the parking brake **(h).**

4.23.5 Turn the key switch to “Position 0” (OFF).

4.23.6 Remove the ignition key before you leave the driver’s seat.

WARNING

If the vehicle constitutes a hazard or obstacle to traffic when parked, it should be marked with signs, lights, and other warnings.

If the machine must be parked on a sloping surface, chock the drums with wedges to prevent any vehicle movement.

5. Maintenance

5.1 Maintenance Schedule

	Daily or every 10 hours	Every 50 hours	Every 250 hours	Every 500 hrs.	Every 1000 hrs.
Check level of engine oil.	■				
Check level of hydraulic fluid.	■				
Check and clean spray system.	■				
Check and clean scrapers.	■				
Check fuel level.	■				
Check engine coolant level.	■				
Check air cleaner; replace filters as needed.	■				
Clean sediment cup on engine fuel system.	■				
Test back-up alarm.	■				
Test neutral switch.	■				
Inspect seat belt.	■				
Drain fuel system water separator.		■			
Check battery.		■			
Check external hardware.		■			
Lubricate throttle control.			■		
Lubricate steering cylinder ends.			■		
Inspect shockmounts.			■		
Clean engine cooling system and hydraulic oil cooler.			■		
Replace fuel system water separator element.			■		
Inspect belts.			■		
Change engine oil and replace filter.				■	
Replace hydraulic fluid filter.				■	
Lubricate articulated steering joint.				■	
Replace hydraulic tank breather.					■
Clean/replace cooling system pressure cap.					■
Change hydraulic fluid.					■

	Daily or every 10 hours	Every 50 hours	Every 250 hours	Every 500 hrs.	Every 1000 hrs.
Inspect engine: mounting bolts, valve lash, cylinder head bolts, exhaust system.					■
Clean control lever with compressed air and adjust.					■
Inspect ROPS and torque mounting hardware.					■

5.2 Recommended Products and Amounts

The amounts shown in liters are approximate and are provided as a guide only. To establish an oil level accurately, use the appropriate level plug, dipstick, etc.

Part	Type	Quantity	
Engine	OIL, Diesel Gamma	liters	gallons
	(summer or winter grade)	5.7	1.5
Exciter bearings	#2 lithium-based grease	per bearing 60 grams (2 oz.)	
Hydraulic oil tank	OIL, Arnica 46	26	6.9
Fuel tank	Diesel fuel, clean and filtered	48	12.7
Water tank	Soft water	160	42.3

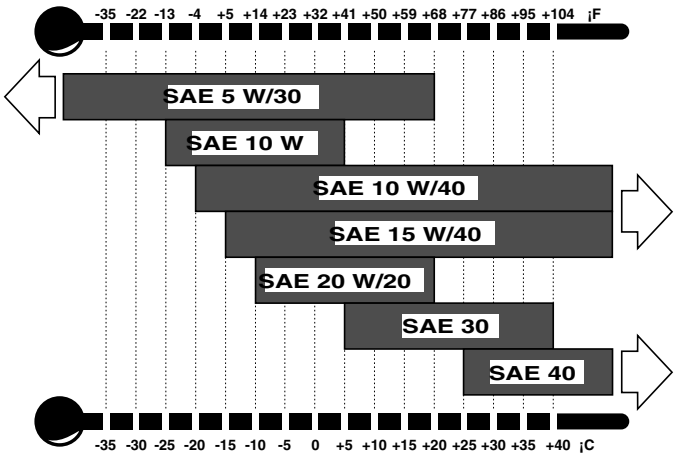
Lubricant specifications

For oils of other brands call Wacker Service.

Part	AGIP code/name	Code/name	
Diesel Engine	Diesel Gamma	API CC - 4/SG	MIL - L - 2104 E
		ACEA E3-96	MIL - L - 46152 E
Hydraulic system	Arnica 46	DIN 51524 - Pt. 3 - Cat. HV	

5.3 Oil/Temperature Table

Diesel engine oil



Comparative table of oils

AGIP	Diesel Gamma 15W/40	ARNICA 46	Rotra MP80W/90	Grease MU EP2
BP	Vanellus 15W/40	SHF 46	Hypogear 80W/90	Grease LT2
ELF	Elf HD 15W/40	Elf 46	Trans Elf BO 80W/90	Elf Epexa 2
ESSO	Lube HDX 15W/40	Invarol EP 46	Gear Oil GX 80W/90	Mulitpurpose Grease H
MOBIL	Delvac 1400 15W/40	Mobil DTE 15	Mobilube HD 80W/90	Mobilgrease MP
SHELL	Rotella SX 15W/40	Tellus T46	Spirax HD 80W/90	Alvania EP2

AGIP Hydraulic oil

Cold climates: Below -10°C	ARNICA 22
Temperate climates: From -15°C to +30°C	ARNICA 46
Tropical climates: Above +30°C	ARNICA 68

5.4 Battery

Before servicing this machine, make sure the engine start switch is in the off “O” position and that the battery is disconnected. Attach a “DO NOT START” sign to the machine. This will notify other personnel that the unit is being serviced and will reduce the chance of someone inadvertently trying to start the unit.

WARNING

Explosion hazard. Batteries can emit explosive hydrogen gas. Keep all sparks and flames away from the battery. Do not short-circuit battery posts. Do not touch the machine frame or the negative terminal of the battery when working on the positive terminal.

WARNING

Battery fluid is poisonous and corrosive. In the event of ingestion or contact with skin or eyes seek medical attention immediately.

Dispose of dead batteries in accordance with local environmental regulations.

To disconnect the battery:

5.4.1 Stop the machine and shut down the engine.

5.4.2 Place all electrical switches in the OFF position.

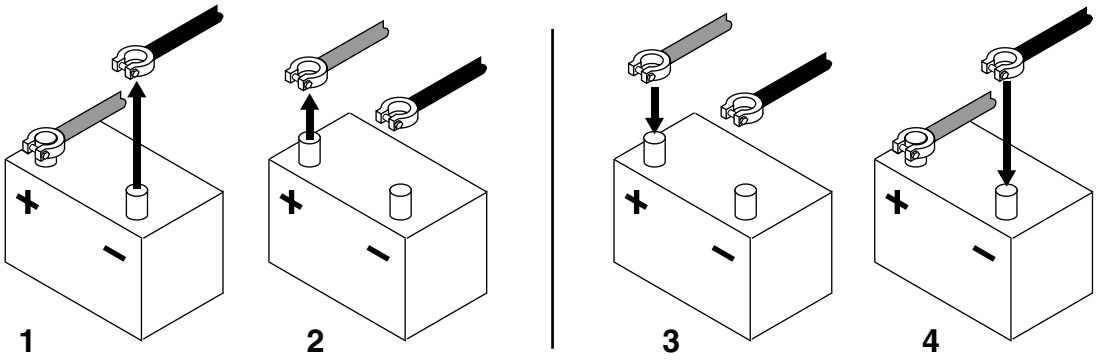
5.4.3 Disconnect the negative battery cable from the battery.

5.4.4 Disconnect the positive battery cable from the battery.

To connect the battery:

5.4.5 Connect the positive battery cable to the battery.

5.4.6 Connect the negative battery cable to the battery.



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The battery supplied on this machine is constructed to resist vibration and provide long service life.

CAUTION

DO NOT use automotive-type batteries on this machine. Automotive-type batteries are not designed to withstand the heavy vibration produced by this machine. The case on automotive-type batteries could fail, causing battery acid to leak.

Inspect battery periodically. Keep battery terminals clean and connections tight.

When necessary, tighten the cables and grease the cable clamps with petroleum jelly.

Maintain the battery at full charge to improve cold weather starting. Dispose of dead batteries in accordance with local environmental regulations.

CAUTION: Observe the following to prevent serious damage to the machine's electrical system:

- Never disconnect the battery with the machine running.
- Never attempt to run the machine without a battery.
- Never attempt to jump-start a machine.
- In the event that the machine has a dead battery, either replace the battery with a fully charged battery or charge the battery using an appropriate battery charger.

5.5 Inspecting the ROPS

Inspect the rollover protection structure (ROPS) for cracks. Inspect the ROPS for any loose bolts or damaged bolts. Replace the damaged bolts with original equipment parts only. Torque mounting bolts to 240Nm (177 ft.lbs.).

Inspect the locking pins for wear or damage.

Replace the ROPS if it is damaged. Do not straighten the ROPS or repair the ROPS by welding reinforcement plates to the ROPS.

5.6 Lifting the Machine

See Graphic: wc_gr002288

Stop the engine. Refer to Section *Stopping the Engine* for information.

Locking the articulated steering joint (a)

Before hoisting the machine, make sure the articulated steering joint is in the LOCKED position. Refer to section *Locking/Unlocking Articulated Steering Joint* for information.

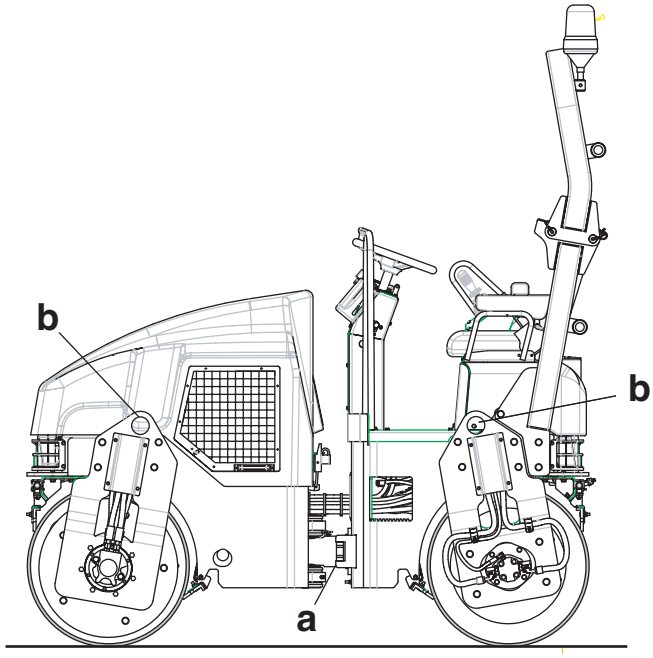
Hoisting

Use hoisting ropes or chains with an appropriate amount of load bearing capacity. Attach the hoisting ropes to the lifting eyes **(b)** on the machine using hooks or shackles. Attach the other end of the ropes to the hook of the hoisting equipment. The hook must have a lifting capacity which will support the weight of the machine which is 2630 Kg (5797 lbs.). Lift the machine using four ropes, one rope attached to each lifting eye and a spreader bar that prevents the ropes from contacting the machine.

WARNING

Use only steel ropes or chains for hoisting. Ropes or chains must have the suitable specified lifting capacity and must be at least 2000 mm (6.5 ft.) long. Do not use improvised ropes or chains.

Do not stand under, or get onto, the machine while it is being hoisted or moved.



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5.7 Tying Down the Machine

See Graphic: wc_gr002287

Lock the articulated steering joint **(a).** Refer to section *Locking/ Unlocking Articulated Steering Joint* for information.

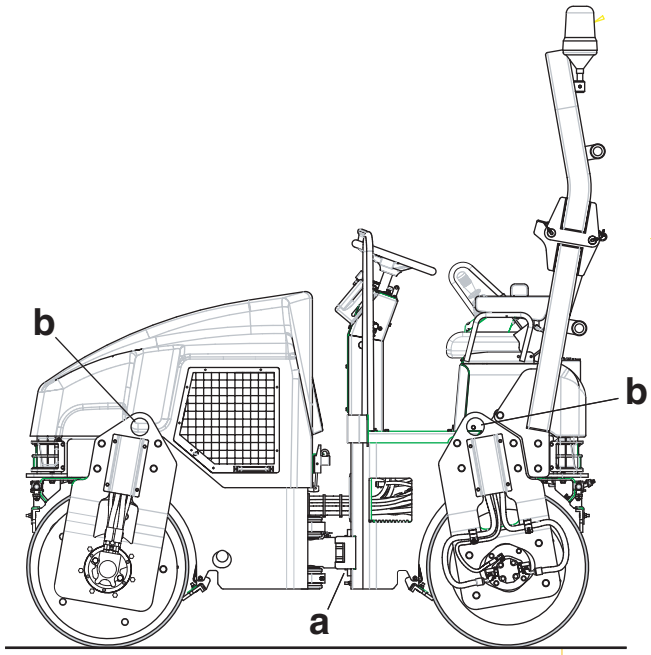
Secure the machine by attaching steel ropes or chains to the tie down eyes **(b)**.

Note: *The transmission is normally braked when the diesel engine is off, or when the hydraulic system is not functioning unless there is a fault and/or the parking brakes have been manually disabled.*

CAUTION: Do not position ropes or chains across the machine frame or the articulated joint when tying down the machine. Damage to the machine may occur.

CAUTION: Do not use complete deflection of shockmounts when tying down the machine. Damage to the shockmounts may occur.

CAUTION: Do not leave the machine tied down for extended periods of time (except for cases of transporting). Damage to the shockmounts may occur.



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5.8 Engine Oil

See Graphic: wc_gr002217

Engine oil level

Stop the machine, apply the parking brake, and switch off the engine.

Check the oil level with the machine standing on a level surface.

5.8.1 Clean around the dipstick.

5.8.2 Extract the dipstick **(a)** and check the oil level. The oil level should be between the two notches on the dipstick. Add oil through oil filler cap **(b)** if needed so that the oil reaches the maximum level mark.

CAUTION: Only use oil which meets the standards specified in the table of recommended lubricants.

Oil consumption in the first 100 hours is higher than normal. During this period it is therefore advisable to check the oil level at least twice daily and top up when necessary.

Engine oil and filter change

Stop the machine, apply the parking brake and switch off the engine.

The machine must be level.

Change the oil when the engine is still warm. Warm oil drains more easily.

Danger of burns! Care must be taken when draining hot engine oil. Hot oil can burn!

5.8.3 Open the engine hood.

5.8.4 Detach the drain hose **(c)** from the frame.

5.8.5 Drain off the used oil into a suitable container.

Note: *Collect, store and dispose of all old oil in accordance with current environmental protection regulations.*

5.8.6 Refit the drain hose to the frame.

5.8.7 Unscrew the filter cartridge **(d)** and remove it.

Note: *Dispose of used filters in accordance with environmental protection regulations.*

5.8.8 Clean the filter housing base and apply a thin coat of engine oil to the seal of the new oil filter.

5.8.9 Install the new filter and tighten by hand. When the seal contacts the base, tighten the filter an additional 3/4 turn.

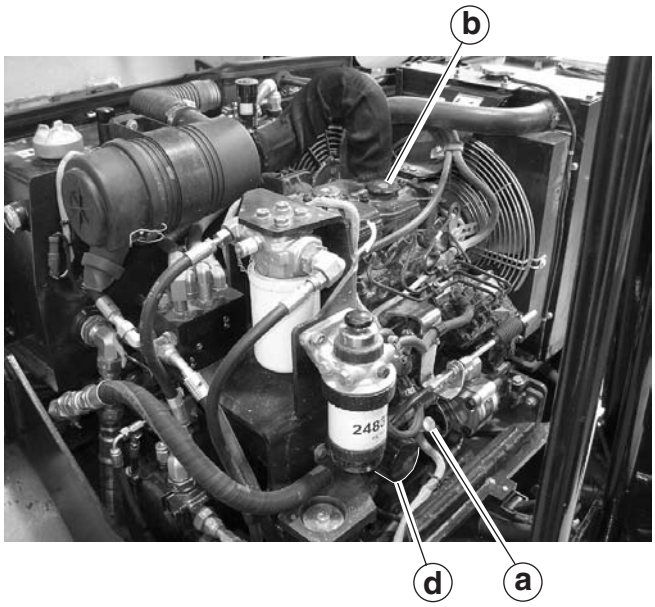
5.8.10 Remove the oil filler cap **(b)** and pour in the required amount of oil. Clean the oil filler cap and replace.

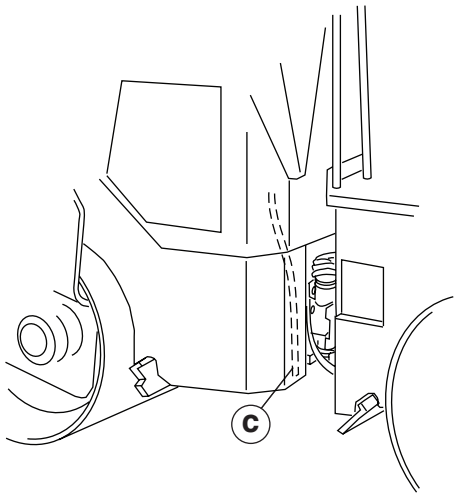
CAUTION: Always use the correct oil type. Do not use oil brands or grades which are not recommended.

5.8.11 Start and run the engine for a few minutes. Check the oil pressure and the filter seal.

5.8.12 Stop the engine and make the following checks:

- Check the oil level and top up if necessary.
- Check the new filter for leaks.





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5.9 Testing Backup Alarm

The backup alarm is located at the rear of the machine.

5.9.1 Engage the parking brake.

5.9.2 Start the engine.

5.9.3 Move the forward/reverse lever to the REVERSE position. The backup alarm should sound immediately. The backup alarm will continue to sound until the forward/reverse lever is moved to the NEUTRAL or FORWARD position.

5.9.4 If the backup alarm does not sound, make the necessary repairs.

5.10 Engine Air Filter

See Graphic: wc_gr002225

NEVER use gasoline or other types of low flash point solvents for cleaning the air filter. A fire or explosion could result.

CAUTION: NEVER run engine without the air cleaner elements. Severe engine damage will occur.

Filter Indicator

The air intake system is equipped with a filter indicator **(a),** which indicates when a filter change is required. Replace main paper filter element if it appears heavily soiled and/or when yellow plunger of indicator appears in or near the red line. Push and hold in the yellow rubber button on top of indicator to reset it after replacing main paper filter element.

Stop the machine, apply the parking brake and switch off the engine.

Replace main filter element

5.10.1 The main air filter element can be used up to six times; after that it must be replaced.

5.10.2 Remove cover **(b)** for the air filter housing.

5.10.3 Remove main filter element **(c)** from the air filter housing.

5.10.4 Clean inside of the air filter housing.

5.10.5 Install new main filter element and replace the cover.

5.10.6 Replace cover **(b)** and reset the filter indicator **(a)**.

Clean main filter element

5.10.7 Remove cover **(b)** for the air filter housing.

5.10.8 Remove main filter element **(c)** from the air filter housing.

5.10.9 Clean inside of the air filter housing.

5.10.10 Clean the filter element with a compressed air gun fitted with a straight or bent nozzle.

CAUTION: Only use filtered, dry compressed air. Do not exceed an air pressure of 30 psi.

5.10.11 Blow through the filter from the inside to the outside along the folds of the filter. Continue until all dust has been removed.

5.10.12 Hold the element up to the light or pass a lamp through the middle to check the condition of the element folds.

5.10.13 Check that the sealed surface is in good condition.

5.10.14 Install main filter element and replace the cover.

CAUTION: Do not re-use damaged filters. Replace damaged filters even though the damage may be very slight.

5.10.15 Reassemble cover **(b)** and reset the filter indicator **(a)**.

Replace secondary filter element.

5.10.16 Remove cover **(b)** for the air filter housing.

5.10.17 Remove main filter element **(c)** from the air filter housing.

5.10.18 Remove the secondary filter element.

5.10.19 Cover the intake port **(d)** and clean inside of the air filter housing.

CAUTION: Do not allow dirt to get into the engine intake port while cleaning - damage to engine will result.

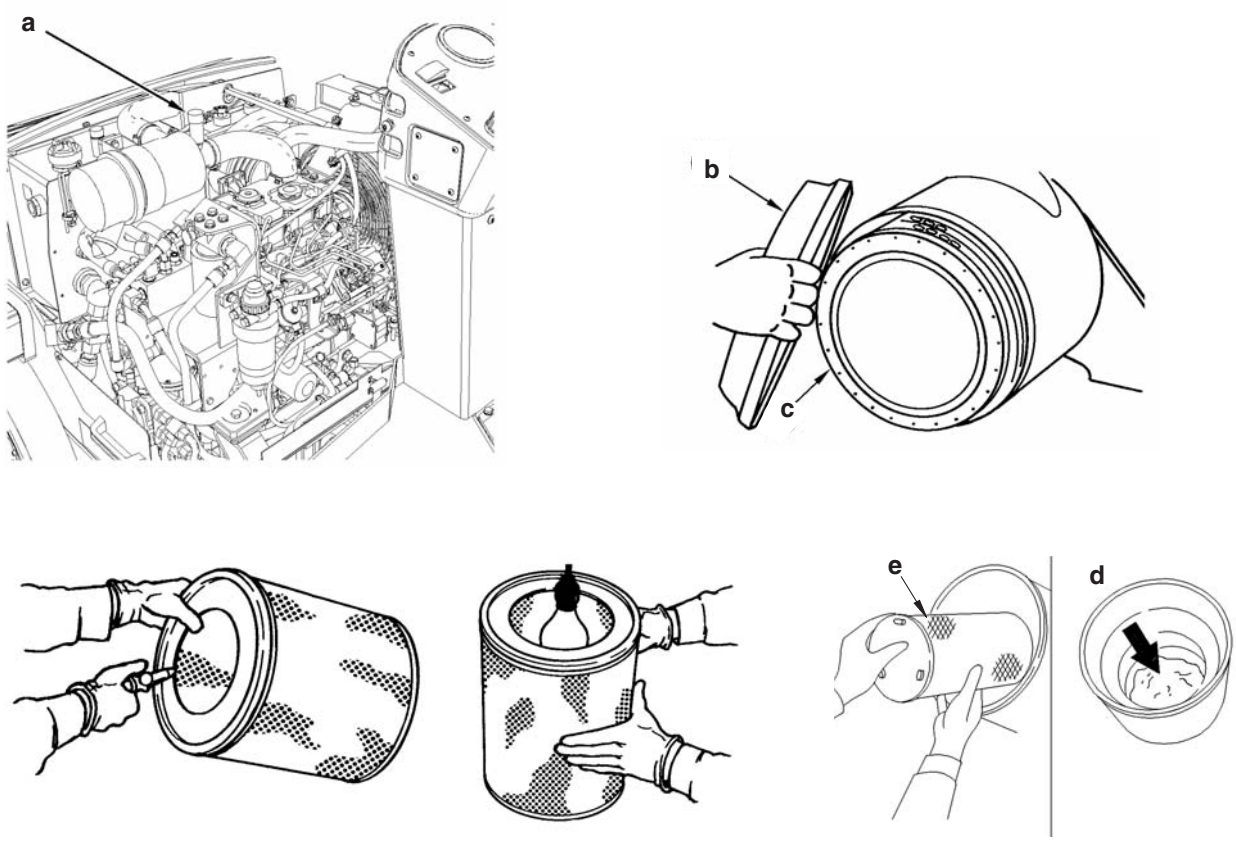
5.10.20 Remove the cover from the intake port and install new secondary filter element.

5.10.21 Install main filter element and replace the cover.

5.10.22 Reassemble cover **(b)** and reset the filter indicator **(a)**.

Note: *Change the secondary element **(e)** every third time the main element is changed.*

CAUTION: Do not use air filter as ether starting aid intake.



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5.11 Fuel System Water Separator

See Graphic: wc_gr002218

Drain fuel system water separator (f)

5.11.1 Open the engine hood.

5.11.2 Attach a rubber drain tube to the valve **(e)**.

5.11.3 Turn valve **(e)** counterclockwise in order to open the valve.

5.11.4 Drain the water and the sediment into a suitable container.

Note: *Collect, store and dispose of all used fluids in accordance with current environmental protection regulations.*

5.11.5 Close valve **(e)**.

5.11.6 Remove the rubber drain tube.

Fuel system water separator element

5.11.7 Open the engine hood.

5.11.8 Turn valve **(e)** in a counterclockwise direction in order to drain the fuel. Drain the fuel into a suitable container.

Note: *Collect, store and dispose of all old fuel in accordance with current environmental protection regulations.*

5.11.9 Close valve **(e)**.

5.11.10 Hold bowl **(d)** while you loosen the collar **(c)**. Remove the bowl **(d)** and the collar **(c)**.

5.11.11 Loosen the collar **(a)**. Remove the element **(b)**.

Note: *Dispose of used filters in accordance with environmental protection legislation.*

5.11.12 Clean the parts. Inspect the parts for damage. Replace the damaged parts or replace the worn parts.

5.11.13 Clean the filter mounting base. All of the old seal must be removed.

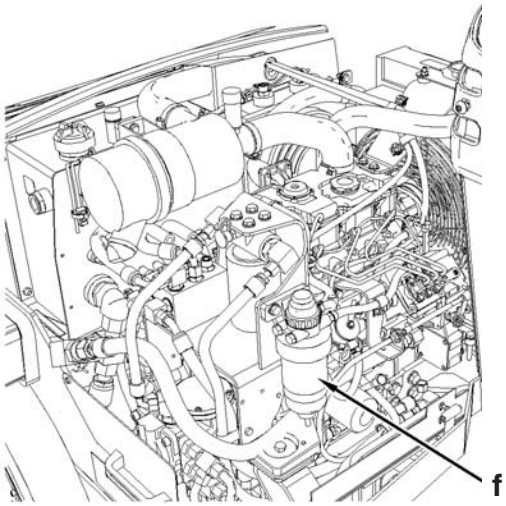
5.11.14 Apply a light coat of diesel fuel to the seal of the new filter.

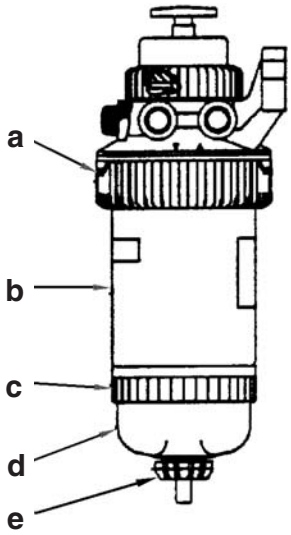
5.11.15 Install the new filter and tighten by hand. Tighten the collar **(a)**.

5.11.16 Install the bowl **(d)** and tighten the collar **(c)**.

5.11.17 Start the engine and check the fuel system for leaks.

5.11.18 Close the engine compartment.





wc_gr002218

5.12 Hydraulic Oil

See Graphic: wc_gr002219

Hydraulic oil level

5.12.1 Stop the machine, apply the parking brake and switch off the engine.

5.12.2 Check the level in the sight gauge **(a)** on the left side of the tank. Check the oil level with the machine standing on a level surface. Maintain the oil level to the mark on the sight gauge.

5.12.3 If the level is low, top up through the filler **(c)**.

CAUTION: Only use oil which meets the standards specified in the table of recommended lubricants.

Hydraulic oil cooler

5.12.4 Stop the machine, apply the parking brake and switch off the engine.

5.12.5 Open the engine hood.

5.12.6 Clean the hydraulic oil cooler **(e)**.

5.12.7 Clean the oil cooler fins using compressed air, high pressure water or steam. Do not knock the fins. Knocking will bend the fins.

Hydraulic oil change

5.12.8 Stop the machine, apply the parking brake and switch off the engine.

5.12.9 Open the engine hood.

5.12.10 Remove hydraulic tank filler cap **(c)**.

5.12.11 Remove the screen from the filler tube of the tank.

5.12.12 Wash the screen and filler cap in clean, nonflammable solvent.

5.12.13 Check the vent **(d)** for the hydraulic tank. Wash with a clean, nonflammable solvent.

5.12.14 Open the drain for the tank **(b)** and drain into a suitable container **(g)**.

Note: *Collect, store and dispose of all used oil in accordance with current environmental protection regulations.*

5.12.15 Remove the suction strainer inside the hydraulic tank. The strainer is removed by unscrewing the large coupling on the outside lower left corner of the tank. Using Loctite 575 or equivalent on threads, install a new suction strainer in the hydraulic tank.

5.12.16 Close the drain for the tank **(b)**.

5.12.17 Install the screen into the filler tube of the tank.

5.12.18 Refill the tank with clean, filtered hydraulic oil. Check the oil level in the sight gauge. Maintain the oil level to the mark on the sight gauge.

CAUTION: The hydraulic system is not designed to accommodate biodegradeable oil.

5.12.19 Install hydraulic tank filler cap **(c)**.

Hydraulic oil filter change

5.12.20 Stop the machine, apply the parking brake and switch off the engine.

5.12.21 Open the engine hood.

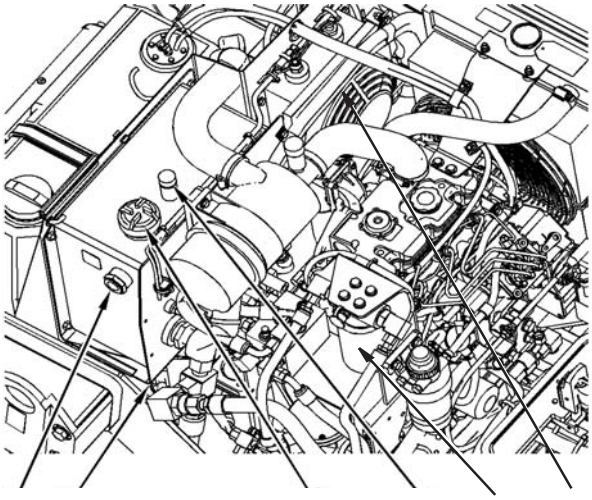
5.12.22 Unscrew the old filter cartridge **(f)** keeping a plastic bag over the cartridge to contain any oil loss.

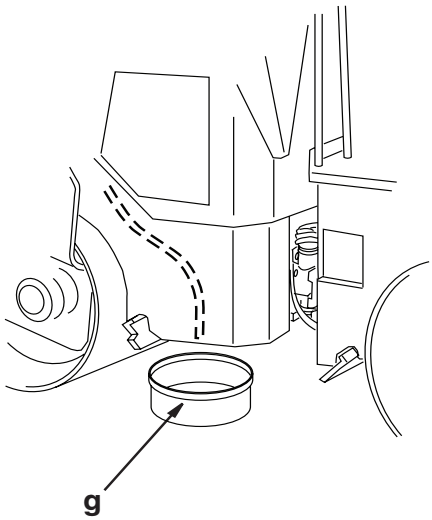
5.12.23 Oil the seal of the new filter.

5.12.24 Install the new filter and tighten by hand. When the seal contacts the base, tighten the filter an additional 3/4 turn.

5.12.25 Check the hydraulic oil tank level. Add oil if needed.

Note: *In the interests of environmental protection, place impermeable sheeting and a container under the machine to collect the liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*





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5.13 Engine Cooling System

See Graphic: wc_gr002226

WARNING

Danger of burns. Only clean the engine cooling system when the engine is cold.

5.13.1 Stop the machine, apply the parking brake and switch off the engine. Allow the cooling system to cool completely.

5.13.2 Open the engine hood.

5.13.3 Slowly loosen the cooling system pressure cap in order to relieve system pressure. Remove cap **(a)**.

5.13.4 Remove the lower hose that is connected to the radiator. Allow the coolant to drain into a suitable container **(b)**.

Note: *In the interests of environmental protection, place impermeable sheeting and a container under the machine to collect the liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*

5.13.5 Replace the lower drain hose. Fill the cooling system with clean water and with a 6 to 10% concentration of cooling system cleaner.

5.13.6 Install the cooling system pressure cap.

5.13.7 Close the engine compartment.

5.13.8 Start the engine and let it run for 90 minutes.

5.13.9 Stop the engine and allow the cooling system to completely cool.

5.13.10 Remove the cooling system pressure cap.

5.13.11 Remove the lower drain hose from the radiator. Drain the cleaning solution.

5.13.12 Flush the cooling system with water until the draining water is transparent.

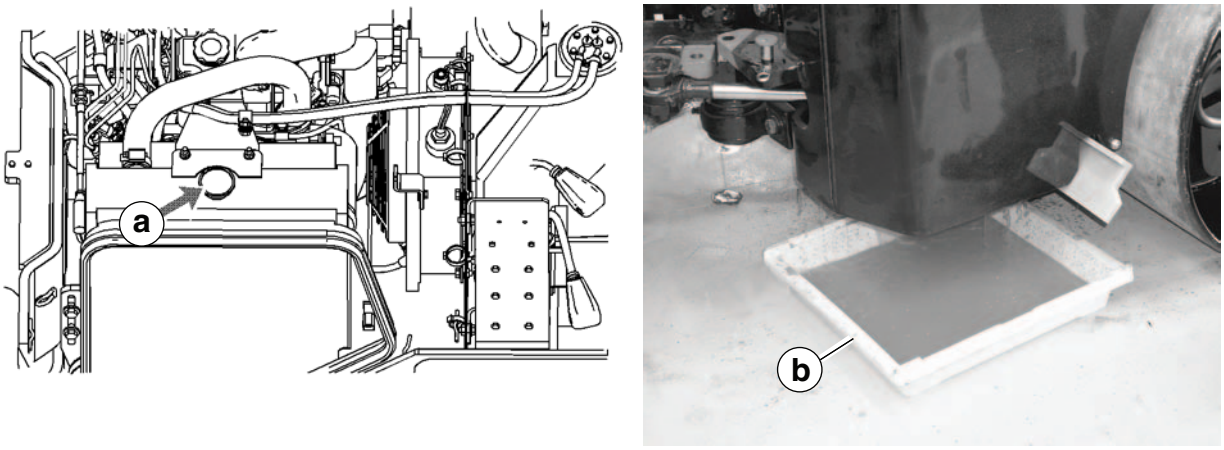
5.13.13 Replace the lower drain hose.

5.13.14 Using long life, premix coolant, fill the coolant level to 1 cm of the bottom of the fill pipe.

5.13.15 Start the engine and let run. Leave the cap off until the thermostat opens and the coolant level stabilizes.

5.13.16 Inspect the gasket on the cooling system pressure cap. Replace the cooling system pressure cap if the gasket is damaged.

5.13.17 Install the cooling system pressure cap.



wc_gr002226

5.14 Cleaning Radiator Core

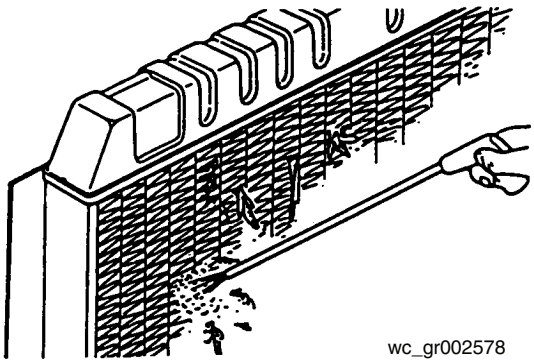
See graphic: wc_gr002578

5.14.1 Stop the machine, apply the parking brake, switch off the engine, and disconnect the battery.

5.14.2 While wearing gloves, remove large pieces of debris by hand.

5.14.3 Use compressed air to remove smaller debris and dust from radiator fins.

Note: *High-pressure water is not recommended. High-pressure water may bend the radiator fins.*



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5.15 Sprinkler Efficiency

See Graphic: wc_gr002220

Clean water spray nozzles

5.15.1 Remove cap **(c)**. Remove spray nozzle **(d)**. Remove screen **(e)**.

5.15.2 Wash nozzle **(d)** and screen **(e)** in a clean, nonflammable solvent.

Note: *Use only Wacker nozzles. Using other nozzles may modify spray pattern and endurance.*

5.15.3 Install screen **(e)** and nozzle **(d)**.
Note: *Use only Wacker nozzles. Using other nozzles may modify spray pattern and endurance.*

5.15.4 Install cap **(c)**.

Note: *Rotation of the nozzle may be required in order to establish a correct spray pattern.*

Drain water spray system

5.15.5 Remove drain plug **(b)** and drain the main water tank.

5.15.6 Open drain valve **(h)** and drain the lines for the spray bar.

5.15.7 Remove the housing for the water filter **(g)**.

5.15.8 Remove the strainer from the housing.

5.15.9 Drain the water from the housing. Allow the water in the water line to drain.

5.15.10 Clean the strainer. Install the strainer into the housing for the water filter.

5.15.11 Install water filter **(g)**.

Clean water spray system filter

5.15.12 Remove water filter **(g)**.

5.15.13 Remove filter bowl **(j)**. Remove screen **(k)**.

5.15.14 Clean filter bowl **(j)** and screen **(k)** with water or compressed air.

5.15.15 Install screen **(k)** into filter bowl **(j)**.

5.15.16 Install water filter **(g)**.

Clean water tank strainer

5.15.17 Remove the filler cap **(l)**.

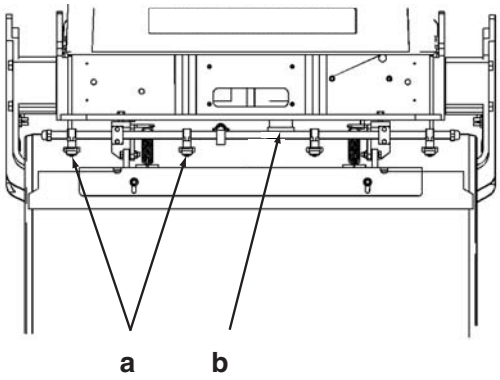
5.15.18 Remove the strainer.

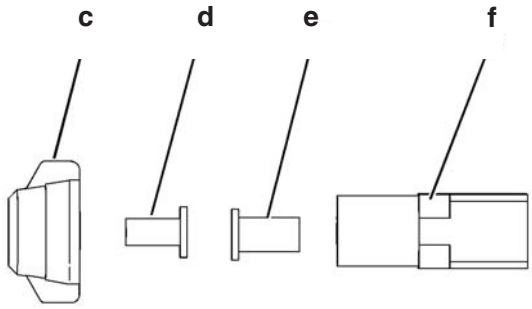
5.15.19 Clean the filler cap and strainer with water or compressed air.

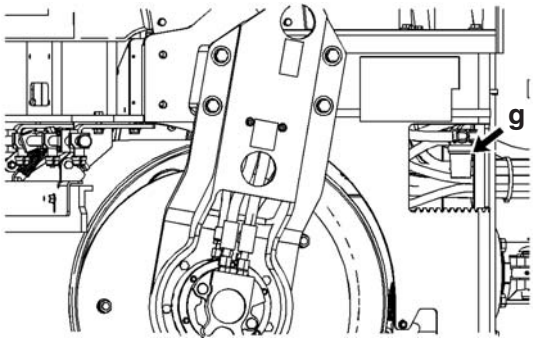
5.15.20 Install the strainer.

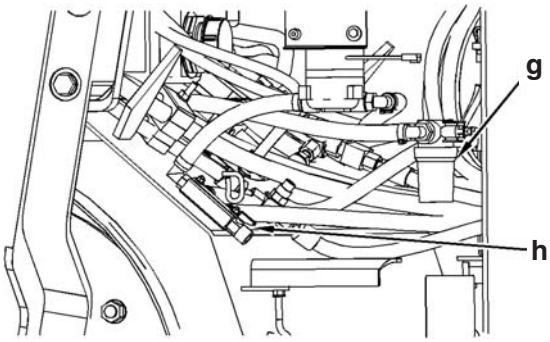
5.15.21 Fill tank with clean water.
Note: *The sprinkler system is not compatible with the use of fuel/water mix or non-stick chemicals.*

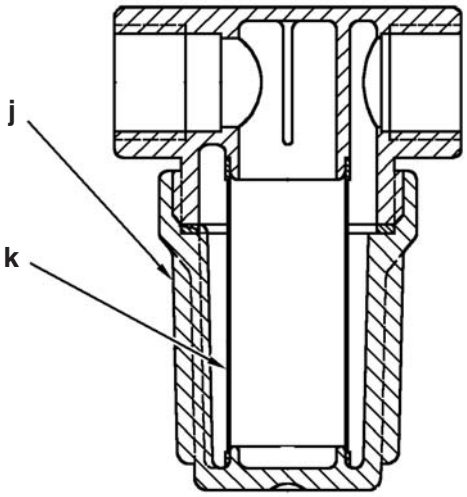
5.15.22 Install the filler cap **(l)**.

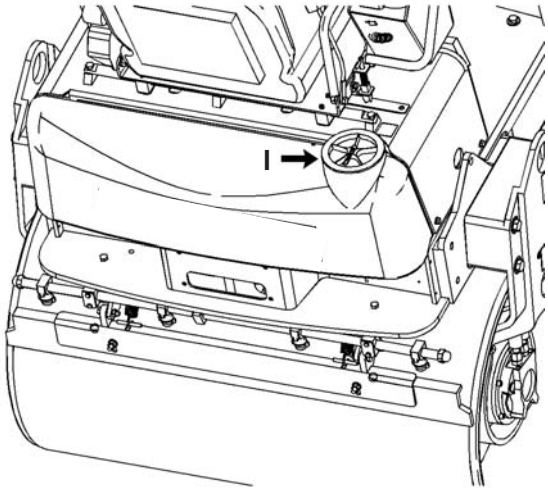












wc_gr002220

5.16 Inspecting and Adjusting Belts

See Graphic: wc_gr002583

The machine is equipped with a belt that operates the fan, the alternator, and the water pump. It is also equipped with a second belt that operates the vibratory pump. For maximum engine performance and maximum utilization of the engine, inspect the belts for wear and cracking. Check the tension of the belts. Adjust the tension of the belts in order to minimize belt slippage. Belt slippage will decrease the belt life. Belt slippage will also cause poor performance. Improper tightening of belts will generate an increase in noise level.

Alternator and Water Pump Belt

5.16.1 Open the engine compartment.

5.16.2 To check belt tension, apply 110N (25 lbs.) of force midway between the pulleys. A correctly adjusted belt will deflect 13 to 19 mm (1/2 to 3/4 inch).

5.16.3 In order to adjust the alternator belt**(a)**, loosen the mounting nuts **(b and c)**.

5.16.4 To achieve the correct adjustment, move the alternator inward or move the alternator outward, as required.

5.16.5 TIghten mounting bolts **(b and c)**.
Note: *The alternator shaft nut must be tightened to a torque of 50±5Nm (37±4 ft.lbs.).*

5.16.6 When new belts are installed, recheck the belt adjustment after 30 minutes of operation.

Vibratory belts

5.16.7 Open the engine compartment.

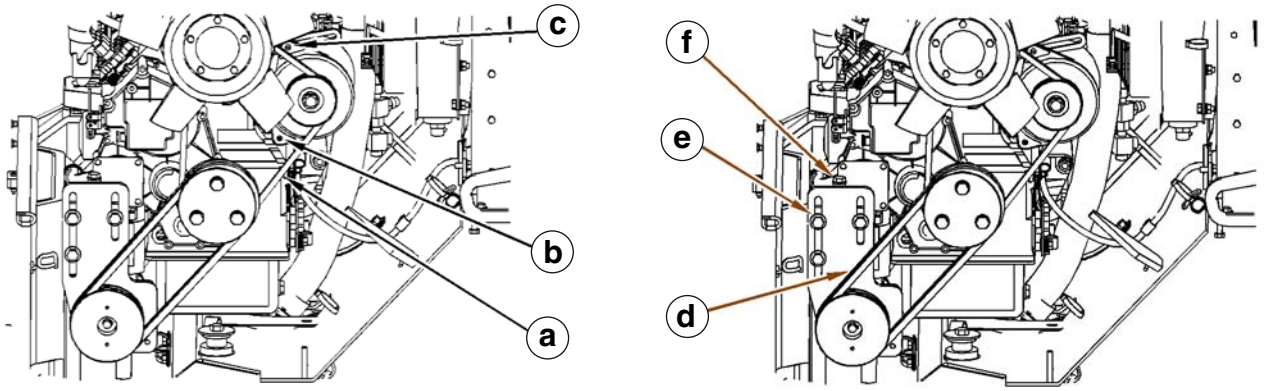
5.16.8 To check belt tension, apply 430±20N (97±5 lbs.) of force midway between the pulleys. A correctly adjusted belt will deflect 5 to 6 mm (0.2 to 0.24 inch).

5.16.9 In order to adjust the vibratory pump belts **(d)**, loosen the three mounting bolts **(e)**.

5.16.10 In order to tighten the belts, turn the adjusting screw **(f)** clockwise. In order to loosen the belts, turn the adjusting bolt counterclockwise.

5.16.11 Tighten the three mounting bolts **(e)**.

5.16.12 Close the engine compartment.



wc_gr002583

5.17 Fuses

See Graphic: wc_gr002291

The fuses protect the electrical system from damage due to overloaded circuits. If a fuse blows, replace it. If a newly replaced fuse blows, check the circuit and repair the problem before you operate the machine.

The fuse compartment is located on the right side of the control console. To access the compartment, remove the four screws and the compartment cover.

(a) Fan motor — 15 Amp

(b) Brake and neutralizer — 10 Amp

(c) Gauges and horn — 10 Amp

(d) Vibration system — 10 Amp

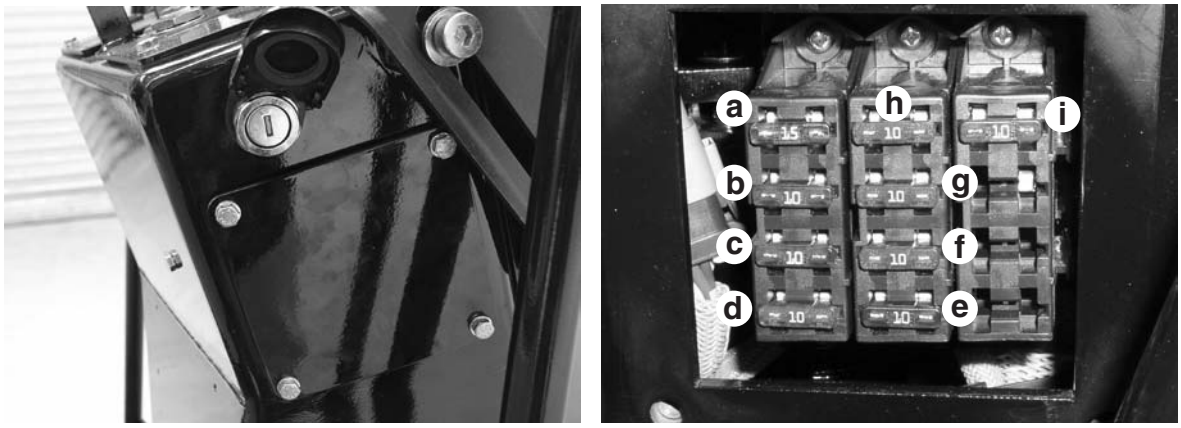
(e) Backup alarm and beacon — 10 Amp

(f) Hour meter — 10 Amp

(g) Water spray system — 10 Amp

(h) Flasher — 10 Amp

(i) Keyswitch — 10 Amp



wc_gr002291

5.18 Shockmounts

CAUTION: Fuel and hydraulic oils deteriorate the rubber of the shockmounts. The engine compartment should therefore be thoroughly cleaned at regular intervals.

CAUTION: Shockmounts are not designed to absorb drops of over 8 cm (3 in.).

Should it be necessary to replace one or more of the shockmounts, it is recommended to change all the other shockmounts at the same time.

Engine shockmounts

5.18.1 Stop the machine, apply the parking brake and switch off the engine, and allow engine to cool.

5.18.2 Open the engine hood and fix it in the raised position with the rod.

5.18.3 Check the wear of the diesel engine shockmounts. The rubber should not be broken nor should it show any signs of having lost its resilience. The shockmounts prevent excessive vibrations from reaching the frame and thus also protect the other components mounted on the engine from damage and faulty operation.

Exciter drum shockmounts

5.18.4 Stop the machine, apply the parking brake and switch off the engine.

5.18.5 Check the wear of the exciter drum shockmounts. The rubber should not be broken nor should it show any signs of having lost its resilience. The shockmounts prevent excessive vibration from reaching the frame and thus also protect the other components from damage and faulty operation.

5.19 Scraper Wear

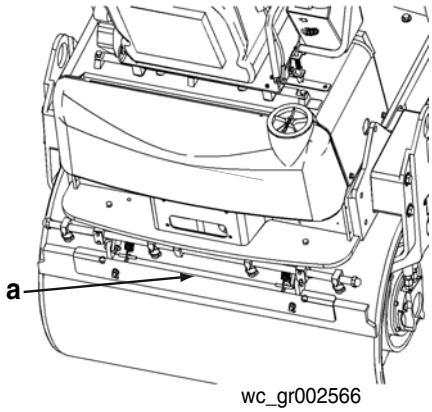
See Graphic: wc_gr002566

5.19.1 Stop the machine, apply the parking brake, and switch off the engine.

5.19.2 Remove dirt and debris from scrapers.

5.19.3 Check the wear of the scraper **(a)**. The scrapers should be adjusted vertical to the ground and to touch the width of the drums. The inner scrapers can be adjusted with the adjustable spring mounts which are located inside the front and rear frames. The tension on the spring mounts should be adjusted in order to prevent bouncing of the scraper when the vibration system is active.

5.19.4 Scraper bar pivots are protected with special, auto-lube plastic sleeves. Check the pivots for wear and replace when necessary.



wc_gr002566

5.20 Lubricating Articulated Steering Joint

See Graphic: wc_gr002223

Stop the machine, apply the parking brake, and switch off the engine.

5.20.1 Lock the articulated steering joint before servicing. See section *Locking/Unlocking Articulated Steering Joint*.

5.20.2 Clean all fittings before servicing.

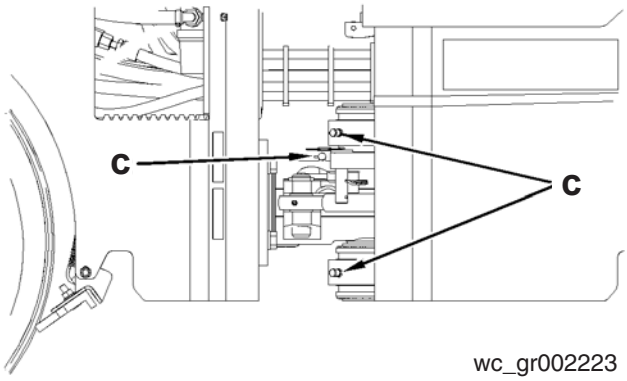
5.20.3 Clean all caps before servicing.

5.20.4 Lubricate the fittings **(c)** for the articulation bearing.

Note: *Use a small amount of grease (see section* Lubrication*). Excess grease can cause seal damage.*

5.20.5 Install all caps after servicing.

Note: *Lubricate pins of locking mechanism with a film of grease as needed.*



wc_gr002223

5.21 Lubricating Steering Cylinder

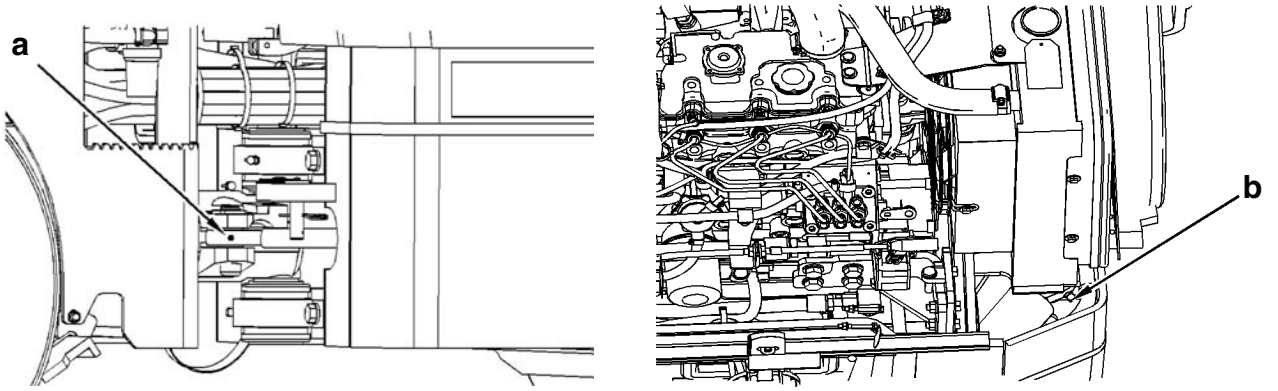
See Graphic: wc_gr002576

Stop the machine, apply the parking brake and switch off the engine.

5.21.1 Lock the articulated joint before servicing. See section Locking/ Unlocking Articulated Joint.

5.21.2 The steering cylinder is located in the pivot area of the machine. It is on the right side of the engine compartment. Lubricate the steering cylinder via fittings **(a & b)**. See *Tech Data* for type and amount of grease.

Note: *Clean the fittings before lubricating the steering cylinder.*



wc_gr002576

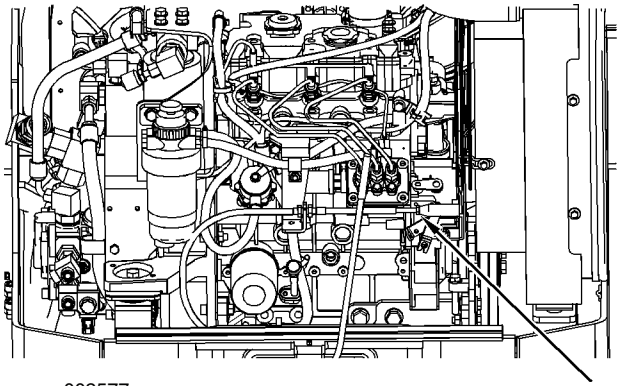
5.22 Lubricating Throttle Control

See Graphic: wc_gr002577

5.22.1 Stop the machine, apply the parking brake, switch off the engine, and disconnect the battery.

5.22.2 Clean the throttle control linkage **(a)** with a clean rag.

5.22.3 Lubricate the throttle control linkage with engine oil.



wc_gr002577

5.23 General Cleaning

Stop the machine, apply the parking brake and switch off the engine. Remove the ignition key and close the protective cover over the key switch.

Protect the following parts with covers and adhesive tape:

- Engine cooling louvers.
- Exhaust pipe.
- Dashboard.
- Forward-reverse lever.
- Backup alarm.

Clean the roller thoroughly with high-pressure water jet and a strong brush. Remove all dirt, mud, and tar from the drums and bodywork.
Note: *Do not spray the backup alarm directly with the high-pressure water.*

Cleaning the vehicle thoroughly will show any oil leaks, loose nuts, or other faults.

Particular attention should be paid to the following:

- Vent cap on the hydraulic oil tank.
- Fuel filler cap on the diesel oil tank.
- Engine compartment.
- Exciter drum shockmounts.

After washing, dry the machine with a jet of compressed air and then remove the protective covers and tape.

5.24 Cleaning the Fuel Tank

See Graphic: wc_gr002227

WARNING

Danger of explosion. Diesel fuel is flammable and must be treated with the necessary caution. Do not smoke when handling fuel. Also, avoid sparks and open flames when handling fuel.

Stop the machine, apply the parking brake, and switch off the engine. The machine should be level.

Clean fuel tank cap and strainer

5.24.1 Open engine hood.

5.24.2 Remove fuel tank cap **(a)**.

5.24.3 Remove the filler screen and wash in a clean, nonflammable solvent. Dry with pressure air.

5.24.4 Inspect cap and filler screen. Replace if damaged.

5.24.5 Install filler screen.

5.24.6 Apply a thin film of fuel to the gasket of the fuel tank cap.

5.24.7 Install fuel tank cap **(a)**.

CAUTION: Only use clean and filtered fuel. Always use the correct type of fuel for the time of year: either normal diesel or winter diesel.

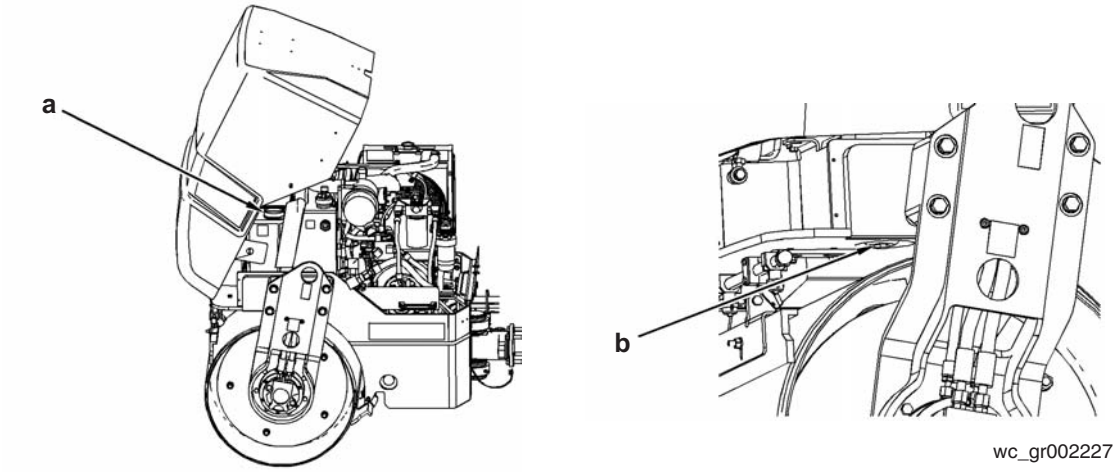
Drain fuel tank and sediment

5.24.8 Remove the drain plug **(b)** and allow the water and sediment to drain into a suitable container.

Note: *In the interests of environmental protection, place impermeable sheeting and a container under the machine to collect the liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*

5.24.9 Install the drain plug **(b)**.

CAUTION: The tank must be cleaned more frequently if the vehicle is being used in very humid or dusty conditions.



wc_gr002227

5.25 Towing

See Graphic: wc_gr002581

Improper hookup and towing is dangerous and could result in injury or death to yourself or others.

The towing connection must be rigid, or towing must be done by two machines of the same size or larger than the towed machine. Connect a machine on each end of the towed machine.

Be sure that all necessary repairs and adjustments have been made before a machine that has been towed to a service area, is put back into operation.

These towing instructions are for moving a disabled machine for a short distance at a low speed. Move the machine at a speed of 2 km/h (1.2 mph) or less to a convenient location for repair. **These instructions are only for emergencies.** Always haul the machine if long distance moving is required.

Shielding must be provided on both machines. This will protect the operator if the tow line or the tow bar breaks.

Do not allow an operator to be on the machine that is being towed unless the operator can control the steering and/or the braking.

Before towing, make sure that the tow line or the tow bar is in good condition. Make sure that the tow line or the tow bar has enough strength for the towing procedure that is involved. The strength of the towing line or the tow bar should be at least 150 percent of the gross weight of the towing machine. This is true for a disabled machine that is stuck in the mud and for towing on a grade.

Keep the tow line angle to a minimum. Do not exceed a 30 degree angle from the straight ahead position.

Quick machine movement could overload the tow line or the tow bar. This could cause the tow line or the tow bar to break. Gradual, steady machine movement will be more effective.

Normally, the towing machine should be as large as the disabled machine. Make sure that the towing machine has enough brake capacity, enough weight, and enough power. The towing machine must be able to control both machines for the grade that is involved and for the distance that is involved.

You must provide sufficient control and sufficient braking when you are moving a disabled machine downhill. This may require a large towing machine or additional machines that are connected to the rear. This will prevent the machine from rolling away out of control.

All situation requirements cannot be listed. Minimal towing machine capacity is required on smooth, level surfaces. On inclines in poor condition or on surfaces in poor condition, maximum towing capacity is required.

Attach the towing device and machine before you release the brakes.

If the engine is running:

The machine can be towed for a short distance under certain conditions. The power train and steering system must be operable.

The operator must steer the machine that is towed in the direction of the tow line.

Ensure that all instructions in this section are followed carefully. Ensure that all instructions in this section are followed exactly.

WARNING

If the engine is stopped:
Shutting off the engine will result in the loss of machine steering.

When the engine is stopped, additional steps may be required before the machine is towed. In order to avoid damaging the power train, the steering system, and the brakes, which may be inoperable, additional steps may be required.

5.25.1 Block the drums in order to prevent the movement of the machine. Do not remove the blocking until the tow vehicle has been positioned and the tow lines are in place.

5.25.2 Manually release the parking brake. This will prevent excessive wear and damage to the braking system when towing.

5.25.3 Turn the bypass valve **(a)** for two full turns in the counterclockwise direction.
Note: *Do not turn the bypass valve further than two turns. When the bypass valve is turned further than two turns, oil will leak past the bypass valve.*

5.25.4 Attach the tow line to the machine at the tow points **(b & c)**.

5.25.5 Attach the tow line to the vehicle that is used to tow the disabled machine.

5.25.6 Remove the blocks from the drums.

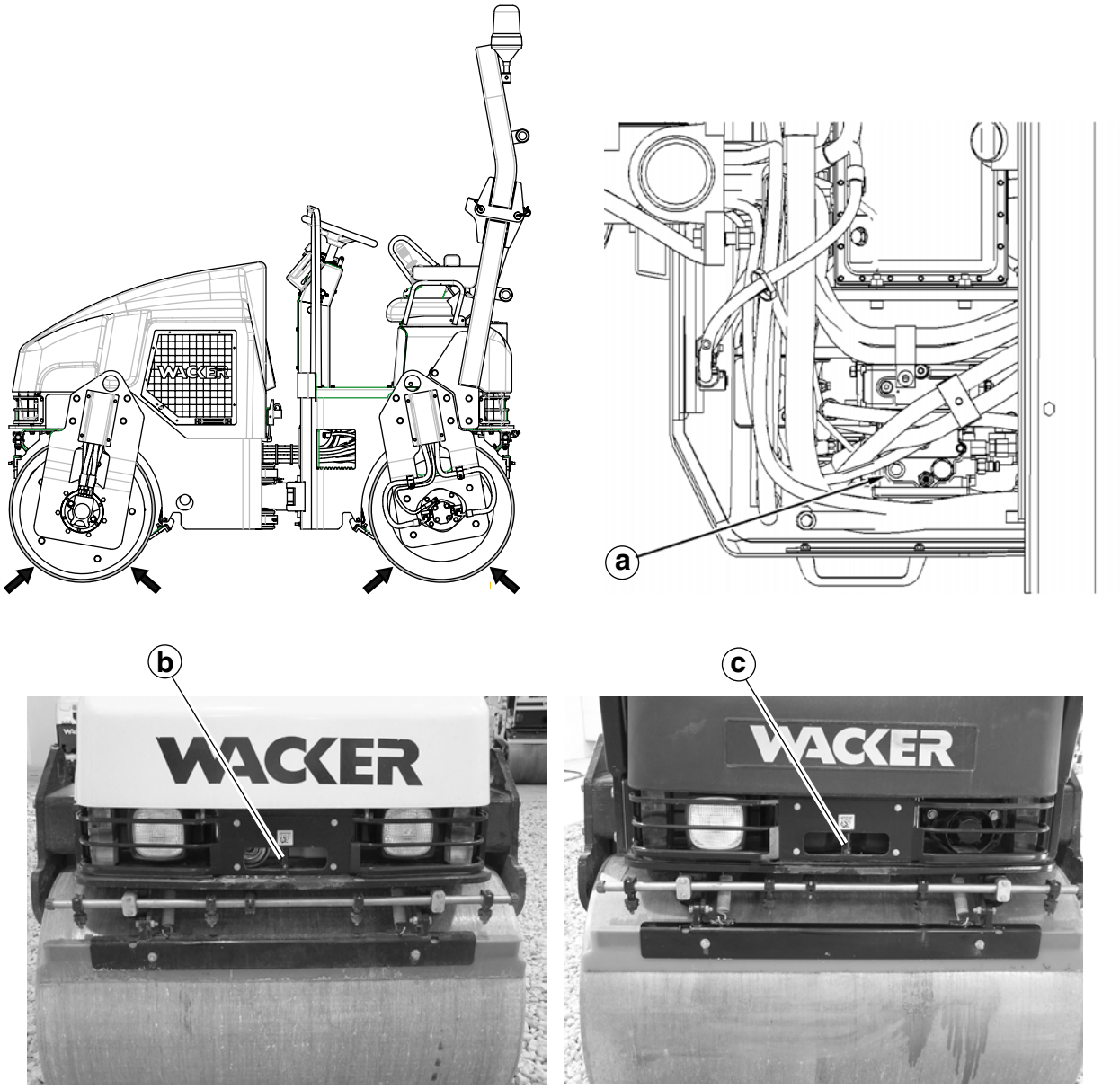
5.25.7 Tow the disabled machine at a slow rate of speed to the desired location.

5.25.8 Once the machine is at the desired location, securely block the drums. This will prevent the movement of the machine.

5.25.9 Turn the bypass valve clockwise in order to tighten the bypass valve.

5.25.10 Manually re-engage the parking brake by fully releasing the two release screws.

5.25.11 Detach the tow lines.



wc_gr002581

5.26 Manually Releasing Parking Brakes

See Graphic: wc_gr002290

There are two drive motors on the roller—one on each drum. Each drive motor includes a parking brake that is spring activated and hydraulically released (SAHR).

To manually release the brakes:

Note: *Carry out procedure on both drums.*

5.26.1 Chock each drum to prevent the machine from moving.

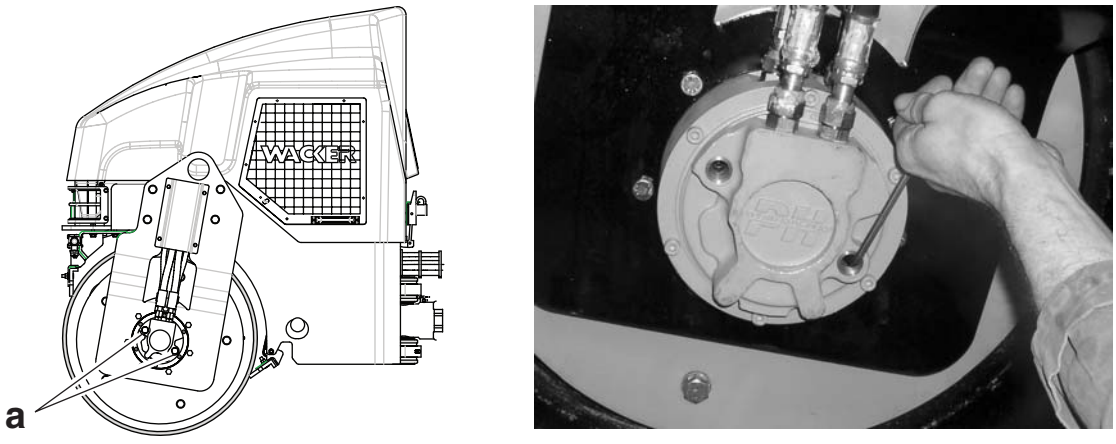
5.26.2 Lock the articulated steering joint.

5.26.3 Remove the plugs **(a)** in order to access the release screws.

5.26.4 Press and turn each release screw in until its threads catch in the brake plate. Tighten each screw until the spring on each screw is fully compressed. You will feel a substantial difference in the amount of torque required to turn the screw once its spring is fully compressed. Then, continue to tighten (turn clockwise) the two release screws to compress the brake plate springs. Alternate back-and-forth between the two screws, turning approximately 45° at a time, until the drums are no longer held by the brake plate. The brake plate should release after turning each screw approximately 120° total. To test if the brake is free, manually turn the drum.

5.26.5 Replace the plugs **(a)**.

Note: *After repair, ensure that the releasing screws are back in the normal operating position.*
Note: *Replacement drive motors come with the brakes in the ON position.*



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5.27 Exhaust System and Engine Air Intake System

Danger of burns. Only check the exhaust system when the engine is cold.

- Open the engine hood.
- Check the exhaust pipes for leaks and holes.
- Check the seal of the exhaust system gaskets for leaks.
- Check the tightness of all retaining bolts.
- Check that the air intake manifold does not leak.

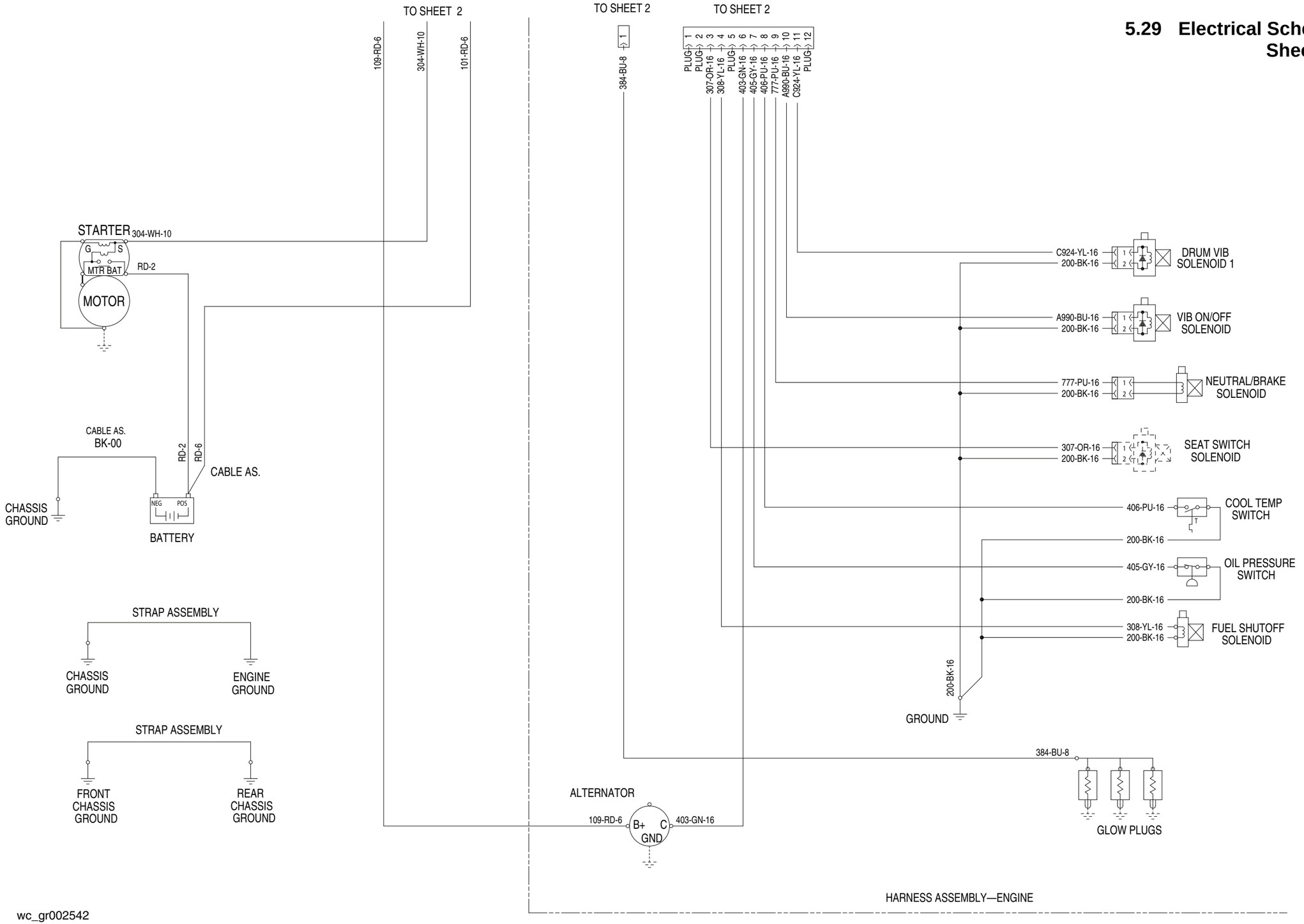
5.28 Storage

If the vehicle is to remain idle for an extended period, the following operations should be carried out:

- Clean the machine.
- Grease all grease fittings.
- Change engine oil.
- Follow the instructions in the diesel engine Instruction and Maintenance manual.
- If the vehicle will be parked outside:
  - Cover the machine or put the machine under shelter.
  - Remove the battery and protect it from freezing conditions.
  - Completely drain the diesel fuel tank and fuel hoses.
  - Completely drain the water tank, water filter, and the roller sprinkling equipment.
- If the vehicle will be parked inside in a controlled environment:
  - Completely drain the water tank, water filter, and the roller sprinkling equipment.
  - Completely fill the fuel tank.
  - Check all fluid levels.
  - Periodically check battery charge.
  - The vehicle should be started and driven a short distance at least once a month so that a thin layer of oil is maintained on the various hydraulic and mechanical components; this ensures adequate protection of transmission parts.

CAUTION: After a prolonged period of idleness, all filters must be changed before the machine is returned to service.

5.29 Electrical Schematics Sheet 1 of 3



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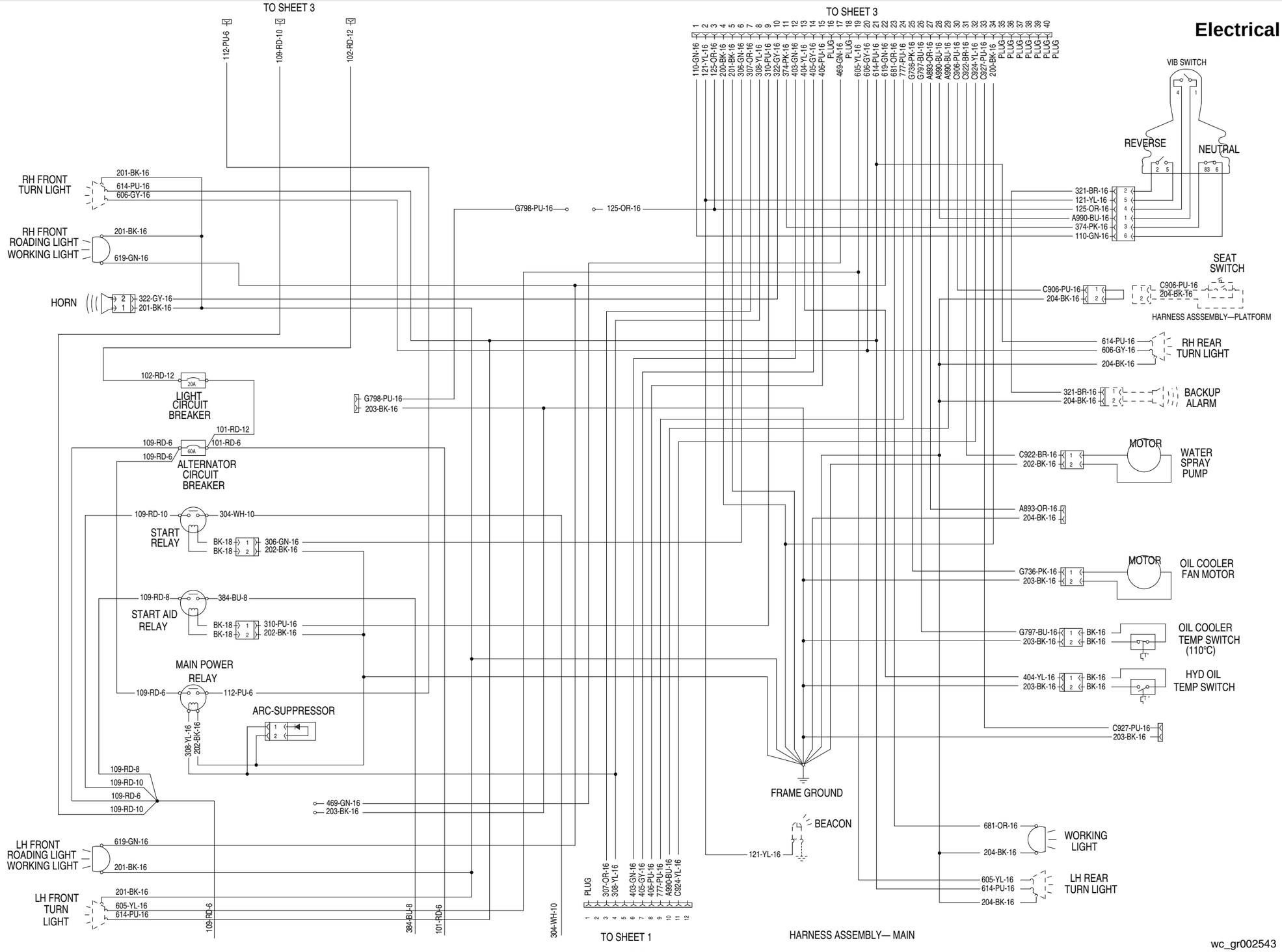
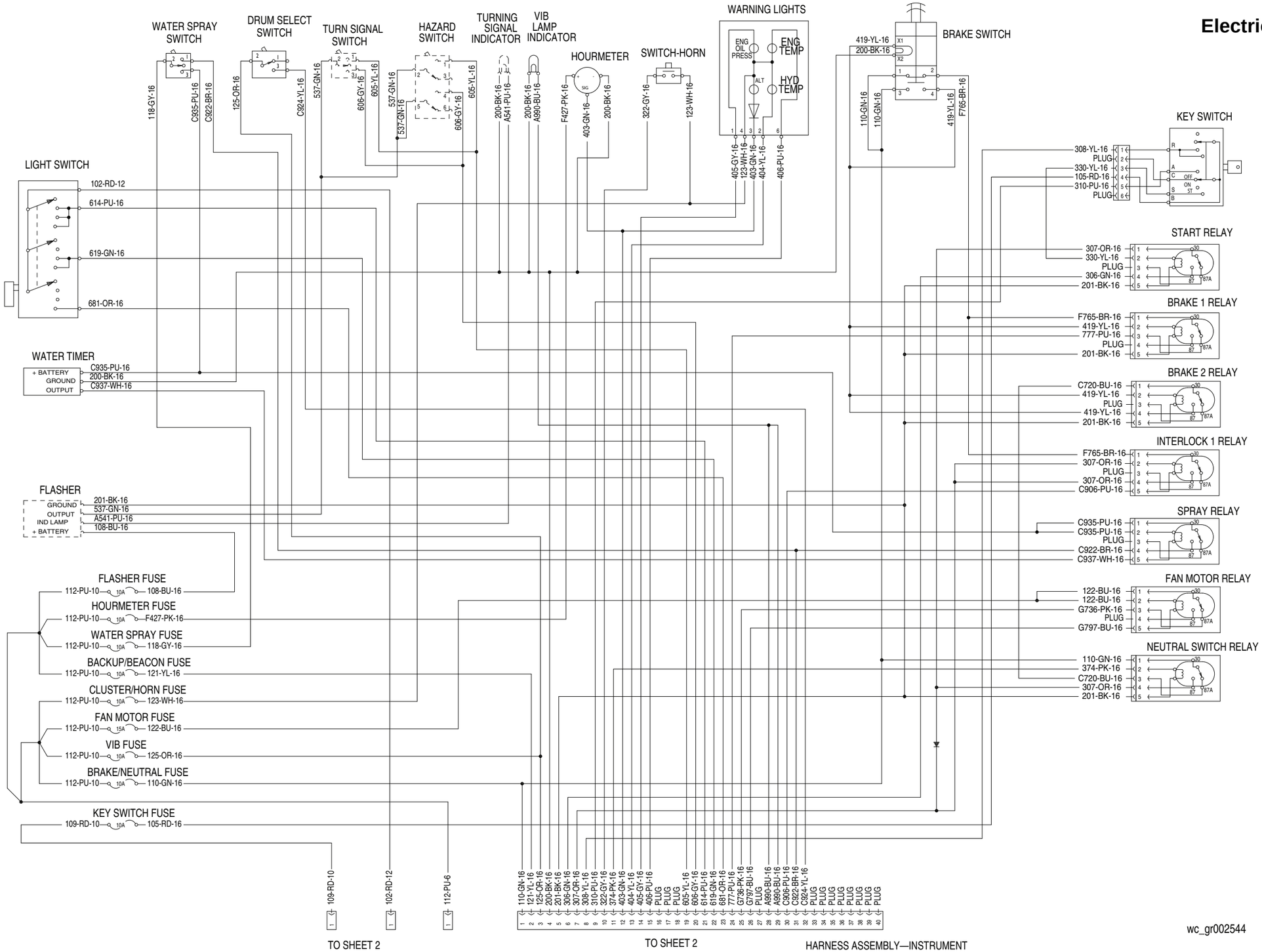
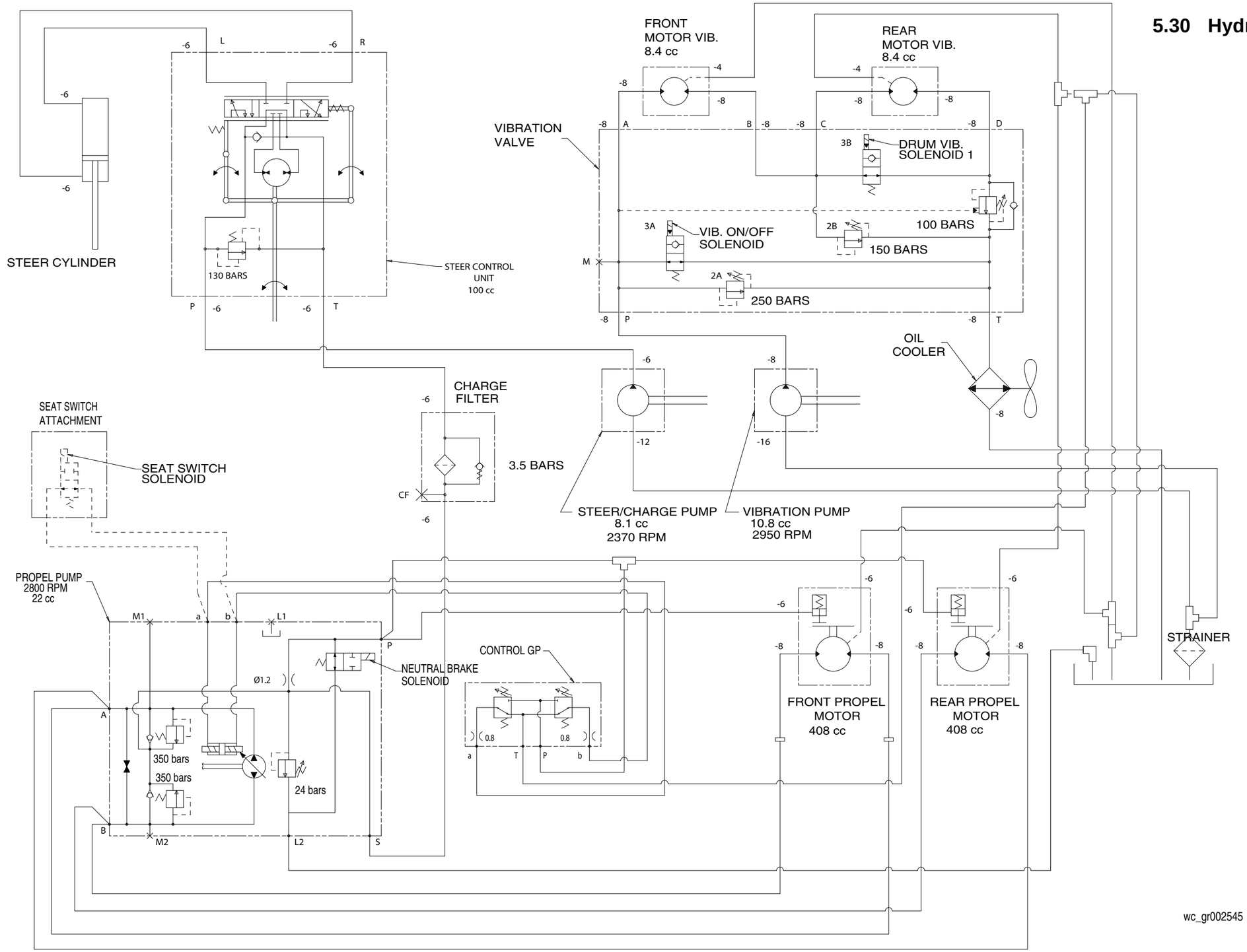
Electrical Schematics
Sheet 2 of 3



Electrical Schematics
Sheet 3 of 3



5.30 Hydraulic Schematic Sheet 1 of 1



ROLLER COMPACTOR

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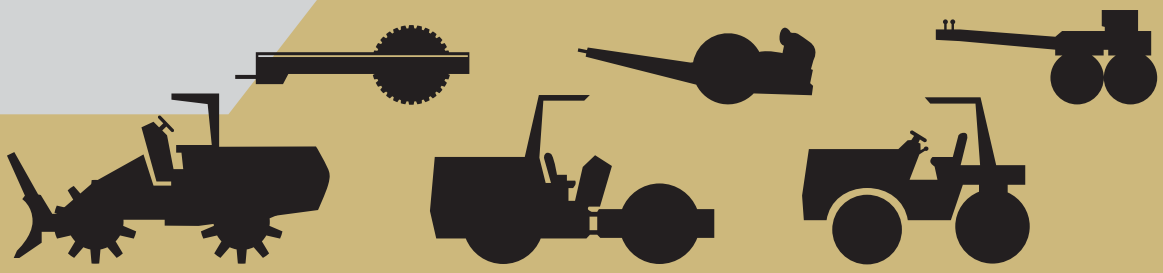
ASSOCIATION OF AEM EQUIPMENT MANUFACTURERS

SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL



SAFETY ALERT SYMBOL

This Safety Alert Symbol means ATTENTION is involved!

The Safety Alert Symbol identifies important safety messages on machines, safety signs, in manuals, or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to YOU?

3 BIG REASONS:

- **Accidents KILL or DISABLE**
- **Accidents COST**
- **Accidents CAN BE AVOIDED**

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Revised 6/02, 9/04

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WORD OF EXPLANATION

The following is a partial list of reference material on safe operating practices:

U.S. Department of Labor publishes safety and health regulations and standards under the authority of the Occupational Safety and Health Act for the general construction and mining industries. Its address is: U.S. Department of Labor, 200 Constitution Avenue, NW, Washington, DC 20210.

SAE - Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096, publishes a list, "Operator Precautions," SAE J153 MAY, 1987.

Association of Equipment Manufacturers, 111 East Wisconsin Avenue, Milwaukee, WI USA 53202, publishes the Roller Compactor Safety Manual and other safety-related material.

WORD OF EXPLANATION

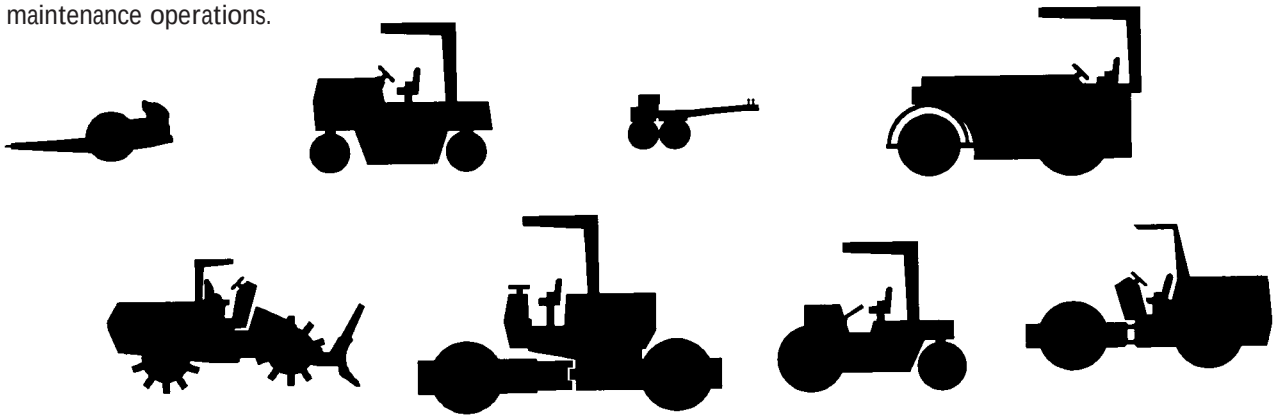
This Safety Manual covers many different types of roller compactors … including steel wheel rollers, vibratory rollers, rubber-tired rollers, segmented pad/sheepsfoot soil compactors and landfill compactors. These may be either self-propelled ride-on, walk-behind or towed rollers. They may be used for the compaction of asphalt, soil, landfill or other materials. Excluded from coverage are vibratory plates and hand rammers.

Regardless of which machine you operate, it is YOUR responsibility to study and understand this Safety Manual, and to see that a copy remains with your machine. The manual begins with your "safety homework," takes you step-by-step through your working day, and ends with maintenance operations.

Manufacturers produce machines with many built-in safety features. Employers provide accident prevention programs. Yet, the ultimate responsibility to operate and maintain your machine with the skill, care and knowledge essential for safety is YOURS.

Do not operate your machine until you have been trained in the use of all operating controls and understand the handling characteristics of the machine.

REMEMBER — SAFETY … YOURS AND THAT OF THOSE AROUND YOU … IS UP TO YOU!



FOREWORD

This safety manual is intended to point out some of the basic situations which may be encountered during the normal operation and maintenance of your machine, and to suggest possible ways of dealing with these conditions.

Additional precautions may be necessary, depending on application, machine type, configuration and attachments used, and conditions at the work-site or in the maintenance area. The manufacturer has no direct control over machine application, operation, inspection, lubrication or maintenance. Therefore, it is your responsibility to use good safe practices in these areas.

The information provided in this manual supplements the specific information about your machine that is contained in the manufacturer's manual(s). Other information which may affect the safe operation of your machine may be contained on safety signs, or in insurance requirements, employer's safety programs, safety codes, local, state/provincial and federal laws, rules and regulations.

If you do not understand any of this information, or if errors or contradictions seem to exist, consult with your supervisor before operating your machine.

IMPORTANT: If you do not have the manufacturer's manual(s) for your particular machine, get a replacement manual from your employer, equipment dealer, or manufacturer of your machine. Keep this safety manual and the manufacturer's manual(s) with your machine.

Unauthorized modifications of machines create hazards. Machines should not be modified or altered unless prior approval is obtained from the manufacturer.

It is your responsibility to read and understand this safety manual and the manufacturer's manual(s) before operating your machine. This safety manual takes you step-by-step through your working day.

Remember that **YOU are the key to safety.** Good safety practices not only protect you but also protect the people around you. Study this manual and the manufacturer's manual(s) for your specific machine. Make them a working part of your safety program. Keep in mind that this safety manual is written for only this type of machine. Practice all other usual and customary safe working precautions, and above all — (FIG. 1)

REMEMBER — SAFETY IS UP TO YOU

YOU CAN PREVENT SERIOUS INJURY OR DEATH

FIG. 1

FOLLOW A SAFETY PROGRAM

KNOW THE RULES

Every employer is concerned about safety. Safe operation and proper maintenance of your machine can prevent accidents. KNOW the rules — LIVE by them. (FIG. 2)

When starting work at a new site, check with the designated safety coordinator for specific safety instructions. DON'T LEARN SAFETY THE HARD WAY.

Know the meaning of all hand signals, signal flags, signs and markings.

Know the traffic rules used at the work site. Know who the signal person is; watch and obey their signals.

Know where the fire extinguishers and first aid kits are kept and how to use them. Know where to get proper aid and assistance when needed.

Use common sense to avoid accidents. If an accident does occur, be prepared to react to it quickly and effectively. NEVER PANIC.

Know how to use the emergency communications system to summon help when necessary.

FIG. 2

KNOW WHAT IT IS?

Consult your supervisor for specific instructions on a job, and the personal safety equipment required. For instance, you may need:

- Hard Hat
- Safety Shoes
- Eye Protection
- Face Protection
- Heavy Gloves
- Reflector Vests
- Hearing Protection
- Respirators

Do not wear loose clothing or any accessory — flopping cuffs, untied shoelaces, dangling neckties and scarves, rings, wrist watches, or other jewelry — that can catch on protruding or moving parts or controls. Long hair should be securely bound to prevent entanglement with moving parts. (FIG. 3)

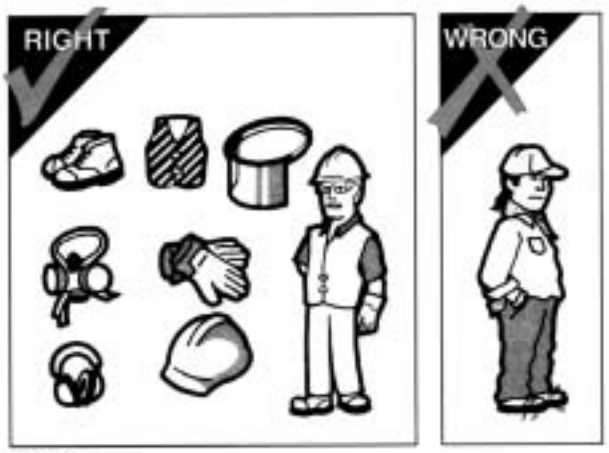


FIG. 3

FOLLOW A SAFETY PROGRAM

BE ALERT!

Know where to get assistance. Know how to use a first aid kit and fire extinguisher or fire suppression system. (FIG. 4)

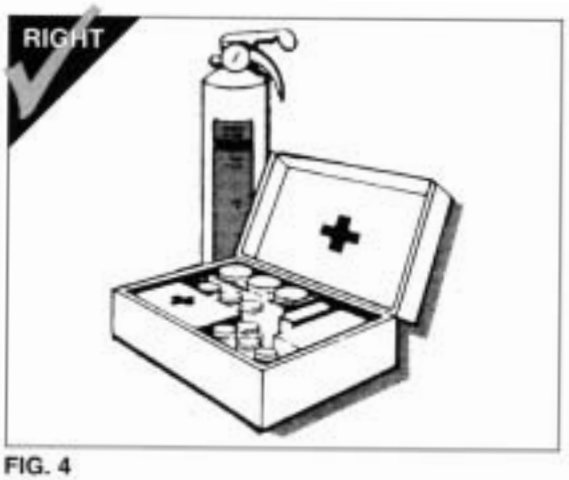


FIG. 4

BE AWARE!

Take advantage of training programs offered.

Safety programs require that one person at each jobsite be assigned the overall responsibility and authority for safety. Know who that person is, and COMMUNICATE.

Know what the jobsite rules are, and FOLLOW THE RULES. Be safety conscious, responsible and reliable. Think about safety BEFORE something happens.

Report unsafe conditions to a supervisor immediately!

BE CAREFUL!

Human error is caused by many factors: carelessness, fatigue, overload, preoccupation, incompatibility between operator and the machine, drugs, and alcohol to name a few. Eliminate these factors BEFORE accidents occur. Damage to the machine can be fixed in a short period of time, but injury, or death has a lasting effect.

FOR YOUR SAFETY AND SAFETY OF OTHERS, ENCOURAGE YOUR FELLOW WORKERS TO ACT SAFELY.

LEARN TO BE SAFE

READ the operator's manual. If one has not been provided, GET ONE AND STUDY IT BEFORE OPERATING THE MACHINE. If you have any questions contact the manufacturer.

Know the positions and understand the functions of all controls before attempting to operate a machine. Know the meaning of all identification symbols on your controls and gauges. (FIG. 5)

Know the location of the emergency shut-down control if the machine is so equipped.

Know the capabilities and limitations of the machine … such as speed, breaking and steering.

Know the operational and transport dimensions of your machine to avoid inadvertently hitting something during operation or transporting.

Carefully read and follow the instructions on all safety signs on the machine. Keep safety signs in good condition. Replace missing or damaged safety signs.

FIG. 5

NEVER operate a machine which is new to you without first being instructed in its proper operation.

CHECK IT OUT!

Always conduct a pre-shift inspection before operating any machine. Know what safety devices your machine is equipped with … and see that each item is securely in place and in operating condition. (FIG. 6)

For example:

- Safety Blocks and Locks
- Other Locking Devices
- Lights
- Alarms
- Horn
- Guards and Shields
- Shut-Down Devices
- First Aid Kit
- Fire Extinguishers

FIG. 6

PREPARE FOR SAFE OPERATION

TIRES

Inspect pneumatic tires (if so equipped) for damage, wear, and proper inflation. Never operate with over-inflated or under-inflated tires. (FIG. 7)

Check that all wheel lug nuts are present and tight.

NEVER START OR OPERATE A MACHINE KNOWN OR SUSPECTED TO BE DEFECTIVE OR MALFUNCTIONING.

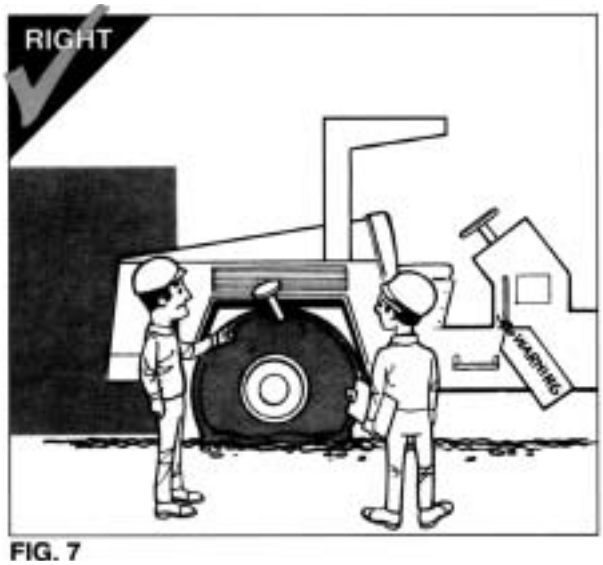


FIG. 7

KNOW YOUR MACHINE

Never operate a machine for which you are not trained or qualified.

Familiarize yourself with pedals, controls and instruments – their locations and function.

To handle controls without slipping, wipe them clean of oil and grease.

Remove tools, supplies and other materials from the working areas and machine walkways – and keep these areas free of trash.

Make sure the items you do carry are not loose or in the way.

ARE REPAIRS MADE?

If your daily check uncovers any item that needs attention – repair, replacement, or adjustment – report it to your supervisor and tag the machine on the start switch and/or other appropriate, prominent location. A minor malfunction could be a sign of a more serious problem if the machine is operated.

FIRE PREVENTION

Never allow flammable fluids or materials to contact hot surfaces.

Never refuel:

- When engine is running
- While smoking
- Near open flames or sparks
- In poorly ventilated area

Never overfill fuel tank or fluid reservoirs. Clean up spills immediately.

Replace fuel cap securely after filling.

Check for fuel, oil and hydraulic fluid leaks. Replace worn or damaged hoses/tubes. After repairs are made, clean the machine before you operate it.

Inspect electrical wiring for worn or damaged insulation. Install new wiring if wires are damaged.

Because ether or other starting fluids are flammable, do not smoke when using them. Always follow the instructions on the container and in the operator's manual for your machine. (See page 19.)

Batteries produce explosive gases. Keep open flame or sparks away. See the manufacturer's instructions when servicing the batteries, when using jumper cables or when using a battery charger. (See pages 36 and 37.)

Remove all trash or debris from the machine. Make sure that oily rags or other flammable material are not stored on the machine. (FIG. 8)

FIG. 8

PREPARE FOR SAFE OPERATION

PREPARING TO ROAD THE MACHINE

Know what conditions you will likely encounter:

- Insufficient clearances
- Traffic congestion
- Type of surface
- Steep grades
- Restricted visibility

Determine appropriate warnings to be used. (FIG. 9) Know whether you will need to be escorted.

If the machine is to travel on a road or highway, refer to the manufacturer's manual(s) for instructions. Become familiar with local laws and ordinances affecting driving on highways. Use "slow moving vehicle" emblem. Make sure flags, lights, and warning signs are in place.

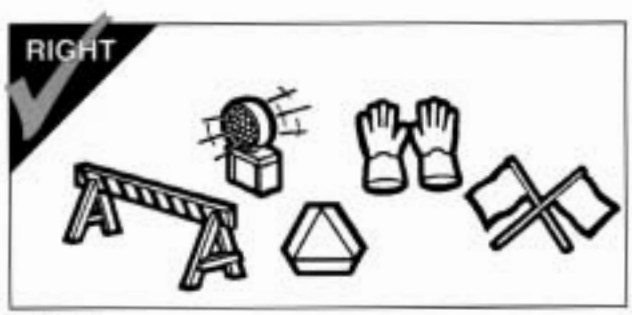


FIG. 9

Select the proper gear before negotiating steep grades. (FIG. 10)

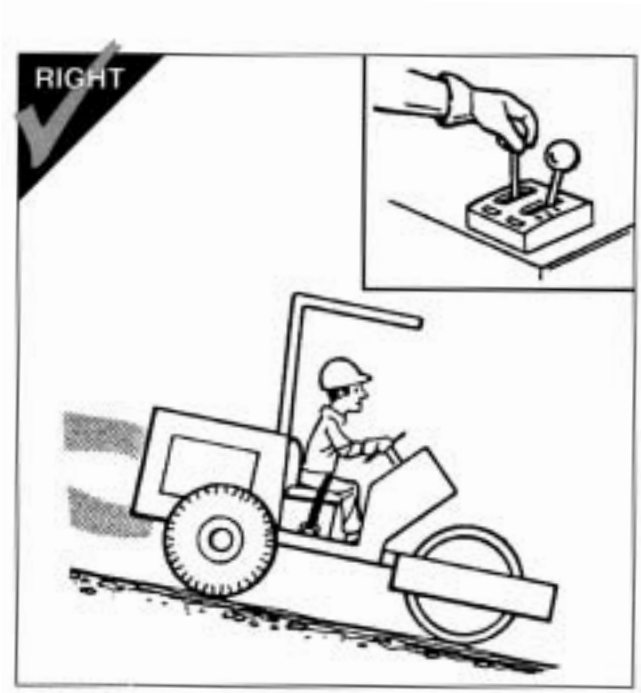


FIG. 10

Before starting, carefully inspect your machine for any evidence of physical damage such as cracking, bending or deformation of plates or welds. Check for cracking or flaking of paint, which may indicate an excessive strain or dangerous crack in the material below. Check for loose, broken or missing parts such as Roll-Over Protective Structure (ROPS) support brackets, vibration isolators, and nuts and bolts. If potentially serious problems are found, do not operate the machine until appropriate repairs are completed.

Check the level of all fluids … brake, transmission, power steering, engine coolant, hydraulic system, and others. Fill low reservoirs only to the proper level.

Check the various systems (hydraulic, cooling, etc.) for leaks. (FIG. 11) Inspect all plugs, filler caps and fittings for tell-tale signs of leaks. ALWAYS use a flashlight or shielded trouble light when checking … Never an open flame. Repair any leaks, or have them repaired by authorized service personnel. (See pages 28 through 42 for additional service cautions.)

Check the fuel level and, if low, fill the tank with the proper grade of clean fuel before extended operation (following the instructions on page 34).

A stalled or faltering engine can result in a real hazard when operating on grades, in traffic or in heavily congested areas.

NEVER smoke when checking fuel level or refueling.

FIG. 11

BE SURE THE WORK AREA IS SAFE

Before beginning operation, thoroughly check the area for any unusual conditions that could be dangerous. (FIG. 12) Check for hidden holes, drop-offs or overhead obstacles that could be dangerous. Check the clearance under overhead power and phone lines. LOOK UP AS WELL AS DOWN.

Be observant of other workmen, bystanders and other machines in the area. Be especially careful if trenches, lightpoles, tiles, buildings, etc. are within the effective range of a vibratory compactor. IMPROPER OPERATION COULD RESULT IN DAMAGE OR INJURY.

Remember, the danger of sliding and/or tipping on steep slopes is always present … regardless of how heavy or "stable" your machine may appear to be. When operating under these conditions, the use of ROPS and seat belts reduces the hazard to operating personnel.

FIG. 12

Walk around your machine once more just prior to mounting it – checking for people and objects that might be in the way – then MOUNT PROPERLY USING STEPS AND HANDHOLDS PROVIDED.

Always use seat belts if your machine is equipped with a ROPS.

Just before starting, check all controls … such as forward and reverse, steering, transmission and throttle to be sure they are in the correct start-up position. (FIG. 13) The parking brake should be applied during the start-up operation.

Check for proper functioning of all operating and shut-down controls.

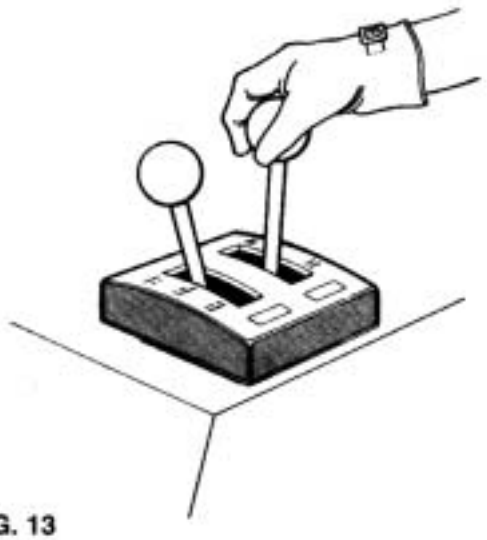


FIG. 13

START CORRECTLY

Know the PROPER starting procedure for your machine. Follow the manufacturer's operation manual … to the letter.

Then, start your engine.

IMMEDIATELY AFTER STARTING THE ENGINE ...

- Observe gauges, instruments, and warning lights to ensure that they are functioning and their readings are within the normal operating range. (FIG. 14)
- Be sure work area is safe for test operation of the various controls and attachments.
- Operate all controls: make certain they operate properly, and "feel" right. Accustom yourself to the "feel" of your machine.
- Listen for any unusual noises; smell for any unusual odors; look for any signs of trouble.
- Check all warning and safety devices and indicators.
- If safety-related defects or malfunctions are detected, shut down the machine. Correct it, or notify your supervisor. DO NOT OPERATE UNTIL CORRECTED.

Check operation of service and parking brakes on level ground if possible.

Check service brakes (including hydrostatic brakes, if so equipped) in both forward and reverse operation (FIG. 15) ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

If an unsafe condition cannot be remedied immediately, notify your supervisor and tag the machine on the start switch and/or other appropriate, prominent location. (See page 28 for Lockout/Tagout procedure.) No machine should be operated if any part is not in safe operating condition. Make certain that any unsafe condition has been satisfactorily remedied.

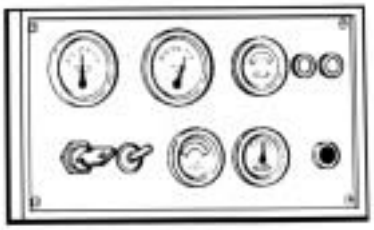


FIG. 14

FIG. 15

COLD WEATHER OPERATION

Consult the engine manufacturer's operation manual for proper cold weather starting procedure.

When using cold weather starting aids, be sure to follow the engine manufacturer's instructions. (FIG. 16)

After starting, operate all systems slowly and gently until properly warmed up.

FIG. 16

BOOSTER CABLE INSTRUCTIONS

1. Connect positive (+) cable to positive post of discharged battery.
2. Connect other end of same cable to same marked post of booster battery.
3. Connect negative (-) cable to other post of booster battery.
4. Make final connection on stalled vehicle away from battery, either on vehicle frame or engine block.
5. Start vehicle and remove cables in reverse order of connection.

WORK SAFELY

REMEMBER THESE RULES

When roading or operating a machine, always stay in the operator's station. NEVER mount or dismount a machine that is moving. Maintain control of your machine at all times.

ALWAYS operate your machine slowly until fully familiarized with it's operation.

Constantly check your total work area for potential hazards.

Never JUMP on or off your machine. Use the steps and handholds provided to mount or dismount safely. Maintain three point contact when mounting or dismounting.(FIG. 17)

- Never use controls or levers as hand holds.
- Never jump off the machine.

Look, listen and smell for possible malfunctions. If malfunctioning controls or erratic operation are detected, correct or report them immediately. DO NOT OPERATE THE MACHINE UNTIL CORRECTED.

Prevent asphyxiation. If you must operate in a building or other enclosed area, or if your machine is equipped with an enclosed cab, be certain there is adequate ventilation.

Use extra care when refueling. (See page 34 for special precautions.)

FIG. 17

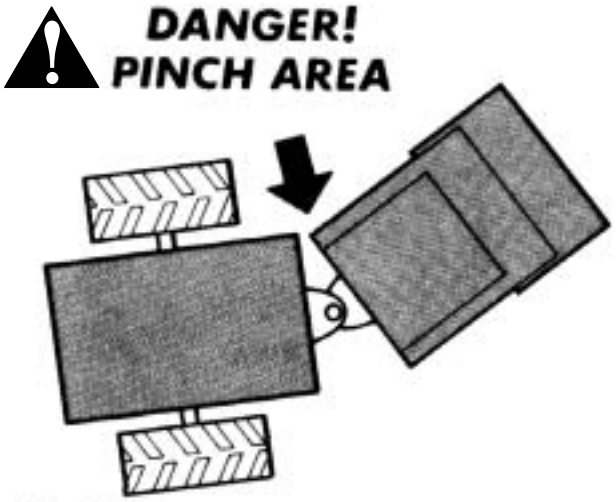


FIG. 18

For maximum safety on machines with more than one operator's position, operate from the position giving the greatest visibility of potential hazards.

NEVER allow unqualified or unauthorized personnel to operate your machine.

NEVER allow other personnel to ride on your machine unless appropriate seating is provided … and then only if authorized to do so.

NEVER abuse your machine. Misuse or abuse can cause an accident.

NEVER enter or place any part of your body in the "hinge area" or other "pinch" areas of an articulated machine while the engine is running, or when there is any chance another person might start the machine. (FIG. 18)

Give the right-of-way to loaded equipment on haul roads. Maintain a safe distance from personnel, motor vehicles and other machines.

Your safety, and the safety of those around you, is determined by the care and judgment YOU use while operating your machine.

WORKING ON SLOPES

When working on slopes, avoid sidehill travel whenever possible … rather operate up and down the slope. (FIG. 19 & 20) Remember the danger of sliding and/or tipping on steep slopes is always present … regardless of how heavy or "stable" your machine may appear to be.

ALWAYS use seat belts IF your machine is equipped with a ROPS.

NEVER allow the engine or machine to overspeed.

When climbing or descending steep grades, ALWAYS select the proper gear BEFORE starting on the slope, to assure adequate power or engine breaking.

If your machine has a gear shift, select a low gear. If your machine has a hydrostatic drive, the speed control should be in the slow travel position, close to neutral … NEVER in the fully displaced position.

On machines that have a gear shift AND a hydrostatic control, BOTH controls must be in their slow travel position.

ALWAYS be sure that manually operated gear type transmissions are fully engaged BEFORE starting onto a grade. DO NOT attempt to change the gear selection while traveling on a grade. See the manufacturer's manual for specific instructions.

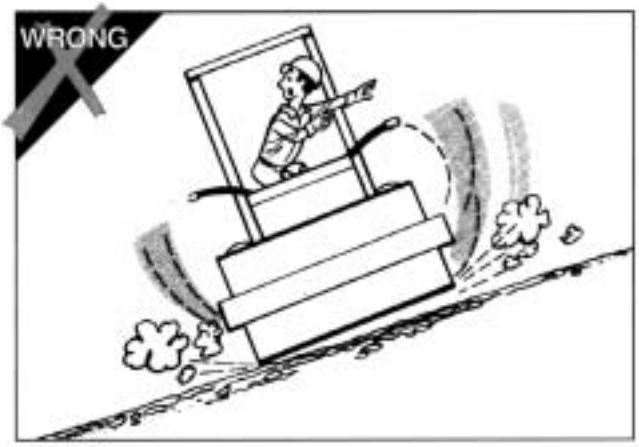


FIG. 19

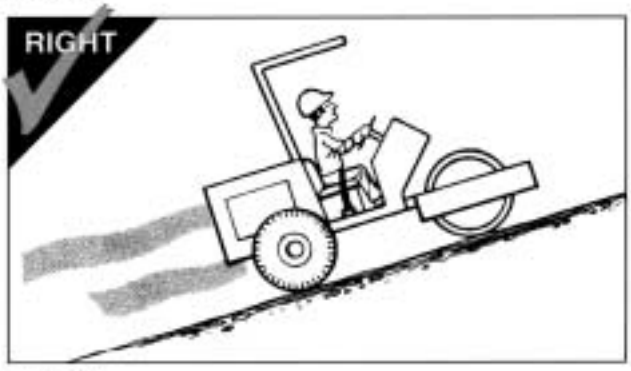


FIG. 20

FIG. 21

Avoid operating your machine too close to an overhang, deep ditch or hole. If your machine inadvertently gets close to a tipping condition or drop-off, STOP and get off the machine after applying the parking brake … plan your moves carefully before proceeding. Reversal is often the best move.

Be alert to potential caving edges, falling rocks and slides.

Check for overhead obstacles that could be dangerous. LOOK UP AS WELL AS DOWN. (FIG. 21)

Be alert to obstacles and excessively rough terrain. Back away from them and go around.

Always travel slowly over rough terrain and hillsides. Maintain a speed consistent with the working conditions.

When traveling on a public road, obey all traffic regulations and be sure that the proper clearance flags, lights and warning signs … such as the "slow moving vehicle" emblem … are used. (FIG. 22)

NEVER speed … and NEVER coast in neutral.

When roading the machine know your approximate stopping distance at any given speed.

NEVER turn corners at excessively high speeds. (FIG. 23)

Always look in all directions before reversing your direction of travel.

Use EXTRA caution when working in close quarters or when traveling through congested areas. Courtesy pays off.

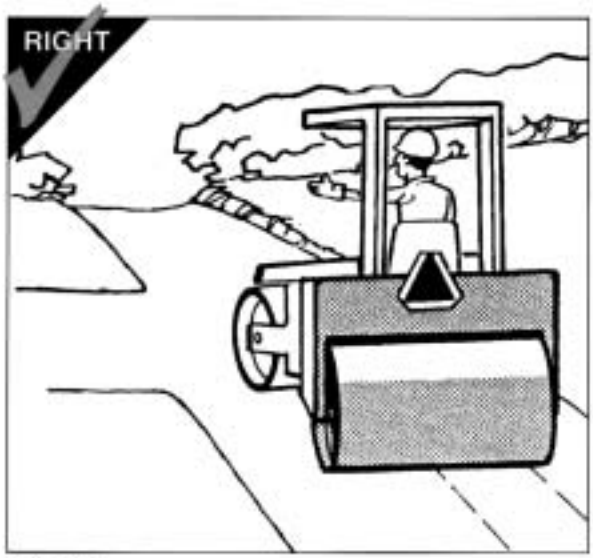


FIG. 22

FIG. 23

PARK SAFELY

Park in an off the road area, out of traffic, or as instructed. If necessary to park in a traffic lane, use the appropriate flags, barriers, flares, lights and warning signals. Provide advance warning signals in the traffic lane to warn approaching traffic.

Park on level ground whenever possible. (FIG. 25) When not possible, position the machine at right angles to the slope. Make sure the machine is on a firm footing, and that there is no danger of sliding. Do NOT leave your machine until you are sure it is safely blocked in both directions and parking brakes firmly applied. (FIG. 24)

Lower the blade and all other hydraulically operated attachments (if so equipped) to the ground.

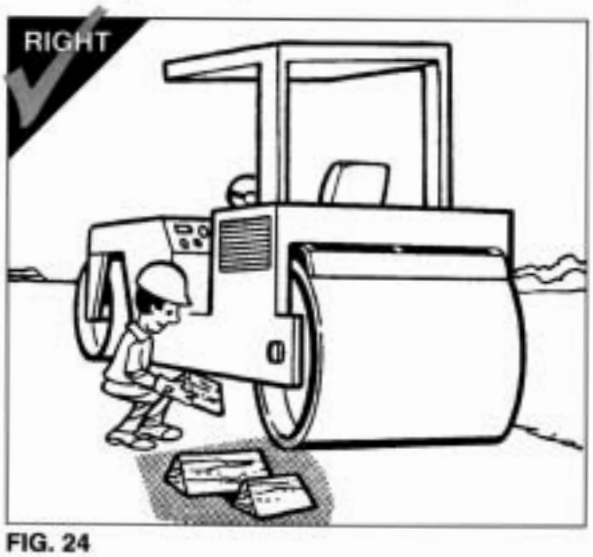


FIG. 24

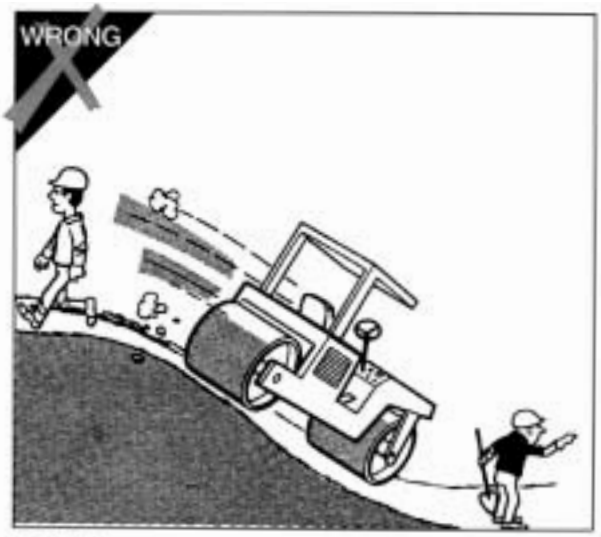


FIG. 25

PARK AND SHUT DOWN SAFELY

SHUT DOWN PROPERLY

Know the proper shut-down procedure for your machine. As with the starting procedure, this varies with the type and model of machine.

Follow the manufacturer's operation manual for YOUR machine. Remove the key(s) to prevent unauthorized starting and movement, and position and lock any antivandalism devices.

DISMOUNT PROPERLY

NEVER dismount from your machine until it is fully stopped and the engine is shut off.

NEVER jump off your machine. (FIG. 26) After stopping, use the steps and handholds provided to dismount safely. Maintain three point contact when dismounting.

FIG. 26

Loading and unloading machines always involves potential hazards. EXTREME CAUTION SHOULD BE USED.

Know the correct loading and unloading procedures for your machine.

All machines are not loaded and unloaded the same way. The procedures recommended by the manufacturer should always be followed.

Several precautions are applicable to all machines:

- NEVER load or unload machine by yourself.
- Keep all non-essential personnel clear of loading and unloading area.
- Load and unload on a level surface.
- ALWAYS use ramps of adequate size and strength. Be sure ramps are sufficiently wide, and long enough to provide a safe loading slope.
- NEVER use ramps that are cracked, damaged, or of questionable strength. (FIG. 27)
- Be sure that the ramps are securely positioned and fastened, and that the two sides are at the same level as one another.
- The ramp surface must provide adequate traction. Be sure the surface is clean and free of grease, oil, ice, and loose material.
- The hauling vehicle should be blocked to prevent movement during loading or unloading of the machine.
- For proper tie-down instructions, see the manufacturer's manual.

FIG. 27

TRANSPORTING SAFELY

GENERAL

When towing a machine on a trailer, or a machine equipped with "portability or transport wheels", ALWAYS use a hauling vehicle of sufficient weight, horsepower and braking capacity to maintain proper control.

NEVER attempt to tow a trailer or machine if the hitching devices are of insufficient or questionable capacity, improperly matched in size or shape, or positioned at improper heights.

When towing a machine equipped with portability or transport wheels, ALWAYS follow the manufacturer's towing instructions.

BEFORE TOWING

When connecting a trailer to a hauling vehicle, block under the trailer's tongue before attempting to make the connection. NEVER attempt to lift heavy tongues or move heavy trailers by hand. NEVER get any part of your body under the tongue when hitching or unhitching.

ALWAYS make sure the hitch is properly and securely locked.

ALWAYS use safety chains between the hauling vehicle and tailer or towed machine. Be sure the chains are properly and securely connected … at BOTH ends. Cross the chains under the tongue when connecting to the hauling vehicle.

ALWAYS make sure electrical and other connections between the hauling vehicle and trailer or towed machine are properly and securely made. After connecting, check the lights for proper operation. If the towed trailer or machine is equipped with brakes operable from the hauling vehicle, check to make sure they are operating properly.

ALWAYS be sure the portability or transport wheels, on machines so equipped, are LOCKED in the lowered position.

Check ALL tires for proper pressure, excessive or abnormal wear, and potentially dangerous cuts, bruises or bulges. Have any problems corrected before proceeding.

TOWING

ALWAYS use EXTRA care when towing a trailer or machine… when maneuvering in tight places, when backing (visibility is reduced, and jackknifing must be avoided), and when towing on steep grades.

Know and obey all local, state and federal laws and regulations.

NEVER travel at speeds above those recommended by the manufacturer.

NEVER allow anyone to ride on a trailer or towed machine. (FIG. 28)

When necessary to disconnect and park a trailer or towed machine, ALWAYS select a location that is level and, if possible, one where children are unlikely to be present. BEFORE disconnecting a trailer, chock the front AND rear of the wheels, and block under the tongue.

See pages 23 through 24 for parking, shut-down procedures and roading machine for transport.

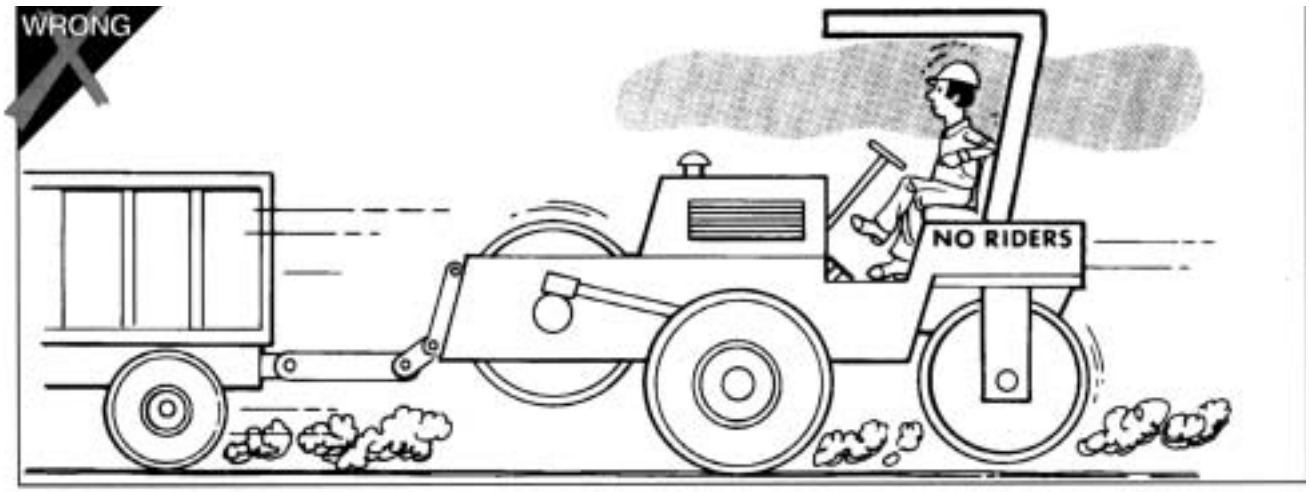


FIG. 28

PERFORM MAINTENANCE SAFELY

GENERAL

Maintenance work can be **hazardous** if not done in a careful manner. All personnel should realize the hazards and strictly follow safe practices.

NEVER perform any work on the equipment unless authorized to do so. (FIG. 29) Before performing any maintenance or repair work, consult the Instruction Manual. Follow the manufacturer's recommended procedures.

BEFORE any maintenance work is begun, review LOCKOUT/TAGOUT procedures. LOCKOUT controls and/or energy source and place a warning label to alert workers of shutdown.

PRIOR to removal of LOCKOUT/TAGOUT, the equipment must be fully operational and all personnel accounted for. Except in cases of emergency, the removal of the LOCKOUT/ TAGOUT should be done by the initiating person prior to the return to start-up.

BEFORE doing any major work, or work on the electrical system, disconnect the batteries.

REPLACE all missing or broken guards and panels.

USE proper nonflammable cleaning solvents. Follow solvent manufacturer's instructions.

ALWAYS remove all flammable materials in the vicinity of welding and/or burning operations.

BURNING OR WELDING in the vicinity of acoustical material may release hazardous fumes.

FIG. 29

CLOTHING AND PERSONAL PROTECTIVE ITEMS

Keep hands and clothing well away from engine fan and moving parts while engine is running.

ALWAYS wear appropriate safety glasses, goggles or face shield when working. (FIG. 30) Proper eye protection can keep flying particles from grinding, drilling or hammering operations, or fluids such as fuel, solvents, lubricants and brake fluids, from damaging your eyes. Normal glasses do NOT provide adequate protection.

ALWAYS wear a hard hat and safety shoes. (FIG. 30) ALWAYS wear hearing protectors when exposed to high noise levels for extended periods. ALWAYS wear a respirator when painting or exposed to dusty conditions. ALWAYS keep your pockets free of loose objects which can fall out and drop into machinery. (FIG. 31) Heavy gloves should be worn for many operations.

FIG. 30

FIG. 31

EXHAUST FUMES

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension. If you do not have an exhaust pipe extension, be positive the area is adequately ventilated. (FIG. 32)

FIG. 32

HEAVY PARTS

Handle tools and heavy parts sensibly – with regard for yourself and other persons. Lower items – don't throw or drop them.

ALWAYS use proper hoisting equipment for lifting heavy loads.

PERFORM MAINTENANCE SAFELY

- Keep machine in proper adjustment at all times. Serious injury could result if adjustments are neglected.
- Whenever possible, AVOID working on a machine with the engine running. If the engine must be run to make checks or adjustments, put the transmission in neutral, set the parking brake and chock the drum and wheels securely ... front and rear ... to prevent movement in either direction.
- Personnel can be caught by moving parts when the **guards are removed** for access in making repairs. A repair or maintenance job is not complete until guards, plates and other safety devices have been replaced.
- NEVER put your fingers in open gears or reach through the spokes of a gear.
- Before working on the fuel system, close the fuel shut-off valve. NEVER smoke or use open flames near the machine while working on the fuel system.
- **Remove and store** all tools before resuming operation.
- Before working in the pivot or "pinch" area of an articulated machine, securely attach the steering frame lock to prevent the machine from turning. (FIG. 33) Enter this area only when necessary.
- Connect any other safety locks provided before proceeding with the work.

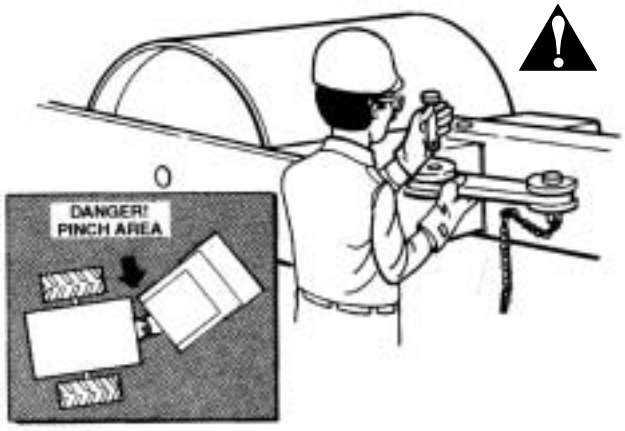


FIG. 33

Before beginning welding or burning operations, drain fuel lines and tank and move all flammable material to a safe distance, and be certain a fire extinguisher is readily available. When welding fuel tanks, either gasoline OR diesel, ALWAYS drain the tank, fill with water, and leave cap off during the welding operation.

All guards, plates and other safety devices must be properly replaced before the machine is returned to service or serious injury to you or other personnel may result.

AVOID burning or welding near acoustical material whenever possible, as **hazardous** fumes may be released. If unavoidable, make sure the area is adequately ventilated, and that a fire extinguisher is ready available.

ALWAYS use authorized replacement parts that meet the machine manufacturer's specifications.

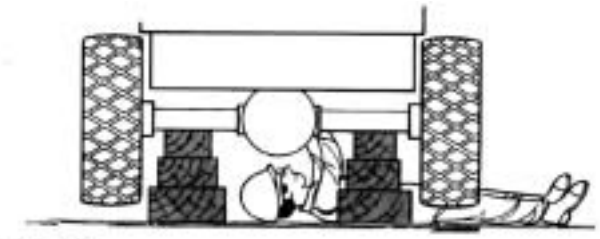


FIG. 34

JACKING AND BLOCKING

ALWAYS lower all movable attachments to the ground or to their lowest position before servicing a machine.

If a machine must be raised for servicing or repairs, ALWAYS block the machine securely. Use axle stands or other rigid supports of ample capacity. NEVER rely solely on the jacks for support. If necessary to work under a machine, be absolutely certain it is adequately supported. (FIG. 34)

WARNING: Never use concrete blocks for supports. They can collapse under even light loads.

When jacking up a machine, use a SUITABLE jack, placed in the proper position, on a solid foundation.

Before working on a machine, chock the drum and wheels securely … front and rear … in such a manner as to prevent movement in EITHER direction. Securely attach the steering frame lock to prevent the machine from turning.

PERFORM MAINTENANCE SAFELY

FIRE PREVENTION

Whenever possible use a nonflammable solvent to clean parts. Do not use gasoline or other fluids that give off harmful vapors.

If flammable fluids, such as diesel fuel, must be used, extinguish open flames or sparks and do not smoke.

Store dangerous fluids in a suitable place, in approved containers which are clearly marked. NEVER smoke in areas where flammable fluids are used or stored. (FIG. 35)

Use proper nonflammable cleaning solvents. Follow solvent manufacturer's instructions for use.

Always remove all flammable material in the vicinity of welding and/or burning operations.

ALWAYS keep the floor in the work area clean and dry. Oily, greasy floors can easily lead to falls. Wet spots, especially near electrical equipment, can be hazardous. (FIG. 35)

Know where fire extinguishers are kept – how they operate – and for what type of fire they are intended.

Check readiness of any fire detectors and fire suppression systems.

FIG. 35

FIRE PREVENTION CHECKLIST (FIG. 36)

- Remove debris such as rags, coal dust, oil, leaves, pine needles.
- Check and repair fuel and hydraulic leaks.
- Check and repair damaged wiring.
- Prevent hose and electrical wire harness abrasion.
- Tighten loose clamps and fittings.
- Secure loose wiring.
- Make sure guards and protective covers are in place.
- Make sure fire extinguisher is available and operable.

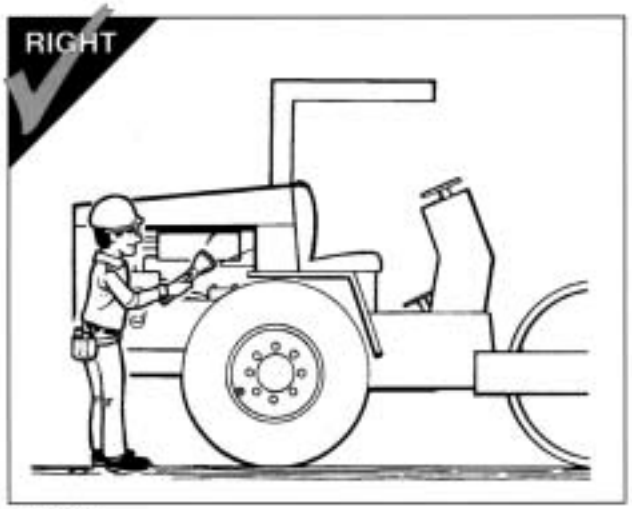


FIG. 36

PERFORM MAINTENANCE SAFELY

REFUELING (FIG. 37)

Precautions

When refueling, the following precautions must be followed:

- Add proper type and grade of fuel only when machine is not running and machine is parked with no one in the cab.
- Fuel in a well-ventilated area.
- Turn off all electrical switches.
- Turn off cab heaters.
- Open lights, lighted smoking materials, flames, or spark producing devices shall be kept at a safe distance while refueling.
- Keep fuel nozzle in contact with tank being filled, or provide a ground to prevent static sparks from igniting fuel.
- Do not spill fuel on hot surfaces.
- Any spillage shall be cleaned immediately.
- Do not start engine until fuel cap is secured to the fuel tank and people are clear of the machine.
- ALWAYS make sure fuel, oil, hydraulic fluid and water are added to their proper tanks.

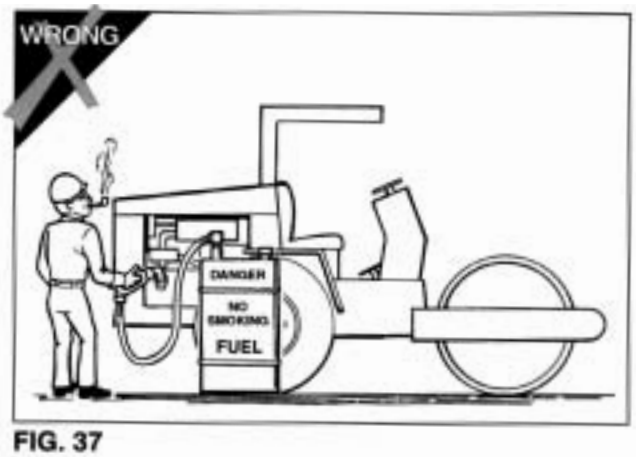


FIG. 37

SERVICING COOLING SYSTEM

When checking coolant level:

- Stop the engine and let the engine and radiator cool before checking. (FIG. 38)

If an overheated engine requires a shutdown:

- **Wait for the radiator to cool.** The hot pressurized coolant can cause burn injuries. Never add coolant to an overheated system.
- **Overheating is a symptom of trouble.** Stop the engine and have the trouble corrected before serious damage occurs.
- If it is necessary to check an overheated engine use a heavy cloth, gloves, heavy clothing and safety glasses or goggles to protect yourself. Stand to the side, turn your face away, and slightly loosen the cap. Wait until the sound stops before removing the cap.

FIG. 38

PERFORM MAINTENANCE SAFELY

SERVICING BATTERIES

Always wear safety glasses and gloves when working with batteries.

Before removing a battery, turn off all electrical equipment, then disconnect the negative (-) battery cable first. Before installing a battery, turn off all electrical equipment, then connect the positive (+) battery cable first.

To prevent sparking at the posts when using a battery charger, always turn the charger off or disconnect it from its power source before connecting or disconnecting charger leads to battery posts. Caps on all cells should be left on and the vent caps would be covered with a wet cloth.

Do not short across the battery terminals. The spark **could** ignite the gases.

BOOSTER CABLE INSTRUCTIONS (FIG. 39)

1. Connect positive (+) cable to positive post of discharged battery.
2. Connect other end of same cable to same marked post of booster battery.
3. Connect negative (-) cable to other post of booster battery.
4. Make final connection on stalled vehicle away from battery, either on vehicle frame or engine block.
5. Start vehicle and remove cables in reverse order of connection.

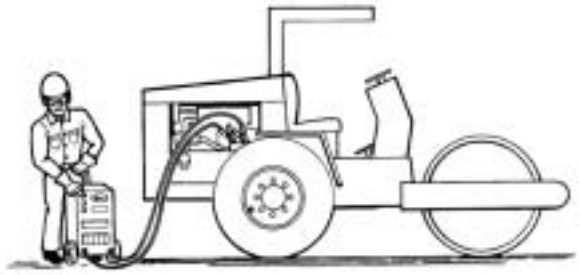


FIG. 39

BATTERY SERVICING

To prevent a battery explosion: (Fig. 40)

- **Maintain** the electrolyte at the recommended level. Check level frequently. Add distilled water to batteries only before starting up, never when shutting down. With electrolyte at the proper level, less space is available for gases to accumulate in the battery.
- **Use a flashlight** to check the electrolyte level. Never use a flame. (Fig. 41)
- **Do not short** across the battery terminals. The spark could ignite the gases.

Battery acid will **burn skin**, eat holes in clothing, and may **cause blindness** if splashed into eyes. If you spill acid on yourself flush skin immediately with lots of water. Apply baking soda to help neutralize the acid. If acids gets in your eyes, flush immediately with large amounts of water and seek proper medical treatment immediately.

When servicing batteries, remember that a lead-acid storage battery generates (when charging or discharging) hydrogen and oxygen – a very explosive mixture. A spark of flame could ignite these gases.

FIG. 40

FIG. 41

PERFORM MAINTENANCE SAFELY

HYDRAULIC SYSTEMS

NOTE: Hydraulic Systems have "special features". Some of the features affecting your safety are listed below.

Pressure can be maintained in hydraulic and air circuits long after the engine has been shut down. This pressure can cause hydraulic fluid or items such as pipe plugs to "shoot out" at high speed if pressure is not released correctly. **Release system pressure** before attempting to make adjustments or repairs.

Consult the manufacturer's instructions for correct procedure.

Before disconnecting **hydraulic fluid** lines, be sure you:

- Shut off engine.
- Always release any air pressure (supercharge) on the hydraulic reservoir.
- Move pedals and control levers repeatedly through their operating ranges to relieve all pressures.

Pressurized hydraulic fluid can penetrate the skin and **cause serious injury**. Therefore, be sure all connections are tight and that lines, pipes, and hoses are in good condition before starting the engine.

Fluid escaping from a small hole can be almost invisible. Use a piece of cardboard or wood, instead of your hands, to search for suspected leaks. (FIG. 42)

FIG. 42

HYDRAULIC SYSTEMS (CONT'D)

If you are struck by escaping **hydraulic fluid under pressure**, serious injury can occur if proper medical treatment is not administered immediately.

During operation, hydraulic fluid and air in an **unvented hydraulic tank** becomes heated and will tend to expand. This will raise the pressure inside an unvented hydraulic tank. If the filler cap is removed rapidly, the pressure in the tank can force the oil out of the tank very rapidly. **The hydraulic fluid may be very hot and may cause severe burns.** Always relieve tank pressure before removing the cap completely. Consult the manufacturer's instructions for the correct procedure.

When adding fluid to any system, be sure to use the fluid recommended by the manufacturer. Certain fluids, when mixed, may destroy seals causing loss of control and possible personal injury.

Keep hydraulic relief valve settings set to the manufacturer's recommendations. **Excessive pressures** could result in structural or hydraulic failures. Low pressure could result in loss of control. Either condition could cause **personal injury or death**.

Be sure the engine is stopped and machine is properly locked out and controls tagged, before working on a machine. Only run engine when it is essential, as in the case of pressure adjustments, lubrication, or tests. Follow the manufacturer's recommendations when making adjustments. Never resume operation until satisfactory adjustments have been made. **The operator must** follow the mechanic's instructions when adjustments are being made or machine is being serviced.

PERFORM MAINTENANCE SAFELY

TIRE INSPECTION

Recommended air pressure **must be maintained** in every tire. Daily checks assure that inflation is correct. If your periodic check discloses a tire that is continuously losing air, a leak is indicated and must be repaired. (FIG. 43)

During your pressure checks, also inspect for:

- Objects wedged between or embedded in tires.
- Missing valve caps and wheel lugs.
- Cuts, tears, and breaks that may need repair.
- Abnormal or uneven wear.
- Damaged or poor fitting rim or rim flanges.
- Projecting body hardware, loose fender bolts, spring clips – anything that could contact a tire.

Do not burn or weld on wheels or rims.

FIG. 43

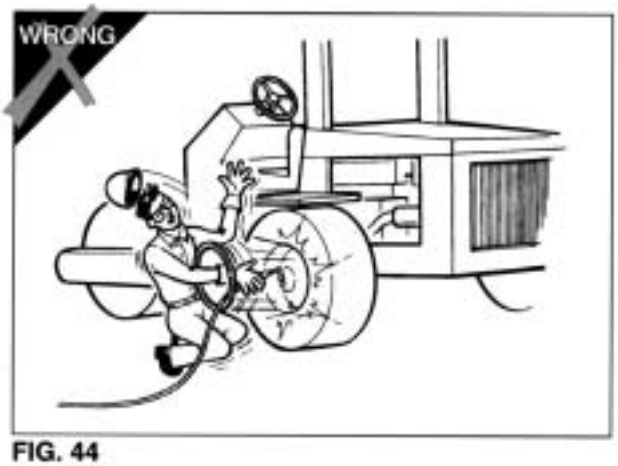


FIG. 44

PNEUMATIC TIRES

Changing tires or adding air can be a hazardous business. Special tools and procedures are required for changing off-highway tires.

Explosion and separation of a tire and/or rim parts can cause serious injury or death. (FIG. 44) Always follow the manufacturer's recommendations or see your tire supplier.

TIRE PRESSURE

Check tire pressure before starting operation. An air pressure rise during operation is normal and should NOT be reduced. Overloads or over-speeds may produce increased tire pressures due to heat. Never bleed tires. Reduce your load – or speed – or stop until tires cool.

ADD AIR

From a distance – with air chuck clipped on the tire valve – and with extension hose that permits you to stand behind tread. (FIG. 45) Always use a tire cage or equivalent for protection.

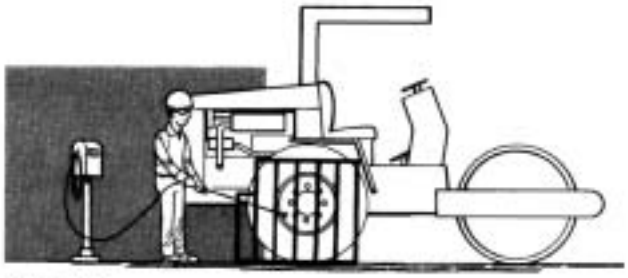


FIG. 45

PERFORM MAINTENANCE SAFELY

ROPS (Roll-Over Protective Structures)

Periodically inspect ROPS for cracks and loose mounting hardware.

Replace all missing, deteriorated or worn rubber parts.

If it becomes necessary to remove a ROPS, reinstall it only on the same machine, in its original position. (FIG. 46)

NEVER alter the ROPS in any way without the written approval of the manufacturer.

NEVER cut holes in or weld on ROPS without the manufacturer's approval.

NEVER attempt to repair a damaged ROPS – it must be replaced with a new unit, approved for that machine.

Periodically inspect seat belts for wear, tear, deterioration or excessive dirt. Replace them if necessary.

AIR CONDITIONERS

NEVER attempt to weld on or near air conditioners. Poisonous gas may be formed when refrigerant gas is exposed to a flame or excessive heat.

Maintenance and repair of air conditioners … except for very minor repairs or servicing … must be done only by an experienced air conditioner or refrigeration technician. (FIG. 47)

FIG. 46

FIG. 47

PARKING AND TRANSPORTING

ALWAYS select a level area to park in and, if possible, one where children are unlikely to be present. ALWAYS chock the front AND rear of the roller … even if leaving the machine unattended for short periods.

ALWAYS use EXTRA care when towing a roller … when maneuvering in tight places, when backing (visibility is reduced, and jackknifing must be avoided), and when operating on grades. NEVER operate a towed roller on steep grades or side slopes, as the possibility of tipping or loss of control is greater when towing a roller.

NEVER allow anyone to ride on a towed roller. And, unless absolutely necessary, never permit anyone in the "pinch" area between the towing vehicle and the towed roller.

When necessary to disconnect and park a towed roller, ALWAYS select a location which is level and, if possible, one where children are unlikely to be present. BEFORE disconnecting, ALWAYS chock the front AND rear of the roll, and block under the tongue.

Extreme care should be exercised when loading or unloading a walk-behind roller. It is generally best to stand behind and to one side rather than directly behind a machine being propelled up or down a ramp.

If the roller is designed to hang from the tailgate of a vehicle when being transported, ALWAYS be certain the hook brackets meet the roller manufacturer's specifications.

Special precautions must also be exercised when loading or unloading, transporting or servicing a towed roller. Consult your manufacturer's manual for specific details.

SPECIAL OPERATING AND MAINTENANCE PRECAUTIONS

FOR TOWED ROLLERS

Most general safety precautions covered earlier in this manual are also applicable to towed roller operation. Many other SPECIAL precautions must, however, be taken. Study your manufacturer's manual(s) relative to special considerations when towing. If you have questions or concerns, consult the manufacturer or your dealer.

ALWAYS use a tow tractor of sufficient weight, drawbar horsepower and braking capacity to properly control the towed roller. Proper weight balance and distribution is also essential.

ALWAYS block under the tongue of the towed roller BEFORE attempting to connect it to the towing vehicles or machine. NEVER attempt to lift heavy tongues or move towed rollers by hand. NEVER get any part of your body under the tongue when hitching or unhitching.

ALWAYS make sure the hitch pin is of the proper size, and securely locked in place before towing. (FIG. 48) If safety chains are provided, make sure they are properly and securely connected … at BOTH ends. Cross the chains under the tongue when connecting to the towing vehicle. If electrical or hydraulic connections are required, make sure the connections are properly and securely made.

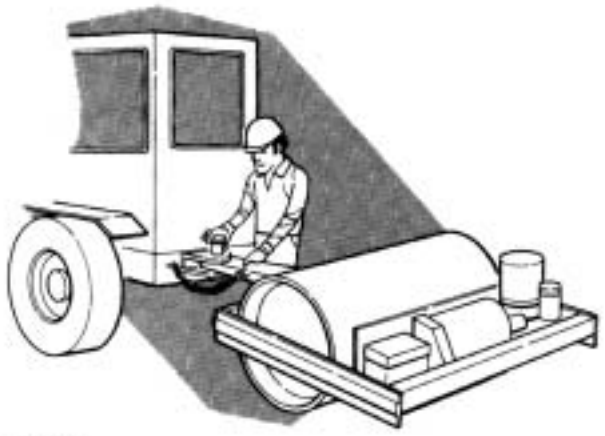


FIG. 48

FOR LANDFILL COMPACTORS

General

Operators of landfill compactors should carefully handle fill materials that could be picked up and thrown by the wheels, become lodged in the machine, or that are highly flammable.

Frequent checks should be made for wire, cable or other material wound around the axle members. Remove them immediately.

Travel with the blade as low as possible.

Maintain good operator visibility – keep all mesh and windows free of accumulated materials that reduce visibility.

When parking the machine, ALWAYS lower the blade.

FIRE PROTECTION

Maintain fire extinguishers and fire protective systems in good working order. ALWAYS recharge extinguishers, or replace with a fully charged unit immediately after use.

Check for, and remove, any waste material accumulation above belly pans and behind protective doors and grills. Accumulations are a fire hazard. (FIG. 49)

FIG. 49

SPECIAL OPERATING AND MAINTENANCE PRECAUTIONS

FOR WALK-BEHIND ROLLERS

Start-Up

NEVER attempt to operate a walk-behind roller before being thoroughly familiar with the manufacturer's operating instructions. If you have any questions or uncertainty, consult the manufacturer and/or his dealer BEFORE attempting to operate it.

ALWAYS follow the manufacturer's instructions for starting the engine. All controls MUST be in the correct position BEFORE attempting to start the engine (for example, the shift lever must be in neutral).

Starting fluid is NOT recommended when hand starting an engine. The engine may kick back.

OPERATION

When operating a walk-behind roller, ALWAYS exercise extreme care to avoid having your feet or clothing caught under the dolly wheels or roll. When possible, stand behind and to one side of the machine rather than directly behind it. Particular care must be exercised when operating near obstructions, on slippery surfaces, grades and side slopes. (ALWAYS wear slip resistant safety shoes or boots.)

NEVER ride on a walk-behind roller unless it is designed to accommodate riders and an appropriate seat is provided.

NEVER attempt to shift on a grade if the roller has a mechanical transmission.

NEVER operate a walk-behind roller in unshored trenches or near steep, unsupported banks. The vibrations could cause a cave-in.

Uneven grades can cause the handle to raise or lower unexpectedly, striking the unwary operator. (FIG. 50)

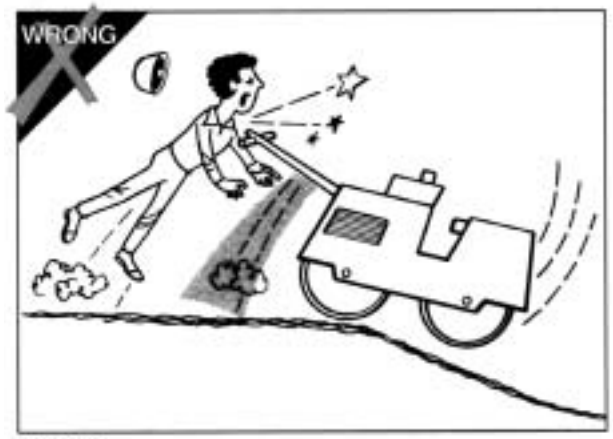


FIG. 50

Do you understand this AEM SAFETY MANUAL AND ITEMS SUCH AS …

- Your safety program?
- Your machine manufacturer's manual(s)?
- Proper clothing and personal safety equipment?
- Your machine's controls, warning signs and devices, and safety equipment?
- How to properly inspect, mount, and start your machine?
- How to check your machine for proper operation?
- Your work area and any special hazards that may exist?
- Proper operating procedures?
- Proper parking, shutdown, and dismounting procedures?
- Proper maintenance procedures?
- Proper loading and unloading procedures for transporting?
- Under what conditions you should not operate your machine?

If you do not understand any of these items, consult with your supervisor BEFORE operating your machine!

A FINAL WORD TO THE USER

Remember that YOU are the key to safety. Good safety practices not only protect you but protect the people around you.

You have read this safety manual and the manufacturer's manual(s) for your specific machine. Make them a working part of your safety program. Keep in mind that this safety manual is written for only this type of machine.

Practice all other usual and customary safe working precautions, and above all –

REMEMBER
SAFETY IS UP TO YOU

YOU CAN PREVENT SERIOUS INJURY OR DEATH

This manual is another in a series on the safe operation of machinery published by AEM.
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FORM RC-80-3

EC DECLARATION OF CONFORMITY
CE-KONFORMITÄTSERKLÄRUNG
DECLARACIÓN DE CONFORMIDAD DE LA CE
DÉCLARATION DE CONFORMITÉ C.E.

WACKER CORPORATION, N92 W15000 ANTHONY AVENUE, MENOMONEE FALLS, WISCONSIN USA

AUTHORIZED REPRESENTATIVE IN THE EUROPEAN UNION BEVOLLMÄCHTIGTER VERTRETER FÜR DIE EUROPÄISCHE GEMEINSCHAFT REPRESENTANTE AUTORIZADO EN LA UNIÓN EUROPEA REPRÉSENTANT AGRÉÉ AUPRÈS DE L'UNION EUROPÉENNE	**WACKER CONSTRUCTION EQUIPMENT AG** **Preußenstraße 41** **80809 München**

hereby certifies that the construction equipment specified hereunder / bescheinigt, daß das Baugerät / certifica que la máquina de construcción / atteste que le matériel :

1. Category / Art / Categoría / Catégorie

Vibrating Ride-On Rollers
Fahrergesteuerte Vibrationswalzen
Rodillos Vibrantes con Conductor Montado
Rouleaux Compacteurs Vibrants à Conducteur Porté

2. Type / Typ / Tipo / Type **RD 27**

3. Item number of equipment / Artikelnummer / Número de referencia de la máquina / Numéro de référence du matériel :
0009469, 0620038, 0620007, 0620037

4. Net installed power / absolute installierte Leistung / Potencia instalada neta / Puissance installée nette :
23 kW

Has been sound tested per Directive 2000/14/EC / In Übereinstimmung mit Richtlinie 2000/14/EG bewertet worden ist / Ha sido ensayado en conformidad con la norma 2000/14/CE / A été mis à l'épreuve conforme aux dispositions de la directive 2000/14/CEE :

Certificate No.: 2000-14/E080850/2 Certificate Date: 27.October.2004
Certificate No.: 2000-14/E080850/1 Certificate Date: 27.October.2004

Conformity Assessment Procedure / Konformitätsbewertungsverfahren / Procedimiento para ensayar conformidad / Procédé pour l'épreuve de conformité	Name and address of notified body / Bei folgender einbezogener Prüfstelle / Oficina matriculadora / Organisme agrée	Measured sound power level / Gemessener Schallleistungspegel / Nivel de potencia acústica determinado / Niveau de puissance acoustique fixé	Guaranteed sound power level / Garantierter Schallleistungspegel / Nivel de potencia acústica garantizado / Niveau de puissance acoustique garanti
Annex VI / Anhang VI / Anexo VI / Annexe VI	**Etablissement Public à Caractère Industriel et Commercial Laboratoires de Trappes 29, avenue Roger Hennequin - 78197 Trappes Cedex**	**0009469 - 104 dB(A)** **0620038 - 104 dB(A)** **0620007 - 105 dB(A)** **0620037 - 105 dB(A)**	**109 dB(A)**

and has been produced in accordance with the following standards:
und in Übereinstimmung mit folgenden Richtlinien hergestellt worden ist:
y ha sido fabricado en conformidad con las siguientes normas:
et a été produit conforme aux dispositions des directives européennes ci-après :

2000/14/EC
89/336/EEC
98/37/EC
EN 500-1
EN 500-4

William Lahner
Vice President of Engineering

Greg Orzal
Manager, Product Engineering

21.12.04
Date / Datum / Fecha / Date

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